# THE IRON AGE

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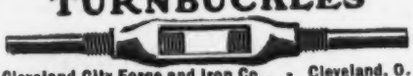

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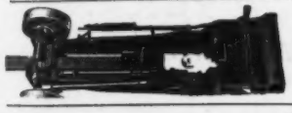

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SEE PAGE 25

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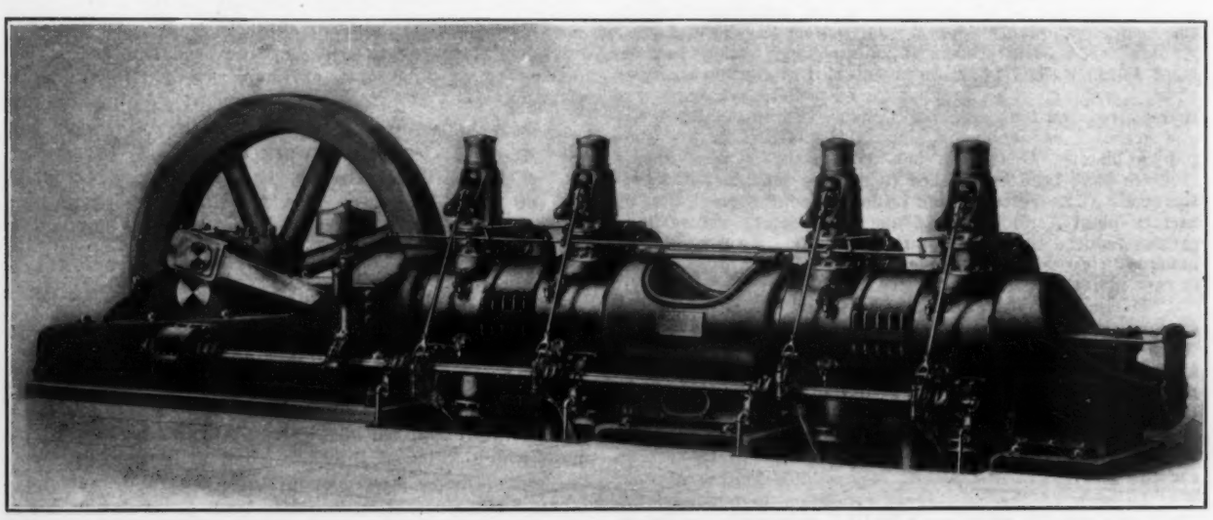
# THE IRON AGE

New York, Thursday, May 14, 1908.

## The Mesta Gas Engine.

Large gas engines more nearly resemble their steam prototypes than do small ones, hence it is not as much of a departure for a builder of powerful Corliss and piston valve engines to take up the construction of heavy duty gas engines as it would be for a manufacturer of small engines, either gas or steam. The years which the Mesta Machine Company, Pittsburgh, Pa., has been engaged in designing and building engines of the largest sizes to meet the requirements of rolling mill and blast furnace work peculiarly qualify it for supplying gas engines to perform the same or equivalent service. Either form of engine requires as characteristic features massive and rigid construction and simplicity and accessibility of wearing parts. A knowledge of these requirements, based on experience, is a valuable advantage to this company in inaugurating its new line, but even more important is the possession of the proper equipment, both in foundries and machine shops. The plant has air furnaces supplying an iron of high tensile strength and superior wearing qualities so necessary in cylinder construction; open hearth furnaces for steel castings containing nickel or vanadium when these may be desired, and a complete brass foundry.



A 600-Hp. Horizontal Gas Engine Built by the Mesta Machine Company, Pittsburgh, Pa.

The accompany illustration shows the general arrangement of the 600-hp. 400-kw. direct connected unit now in process of construction in the works at West Homestead, and typifies the series of sizes called for in the designs as at present laid down. In this engine are embodied, it is believed, the best features of both European and American practice, and in addition improvements which tend toward more economical and successful operation under the exacting conditions of widely fluctuating load which are so frequently met in American practice. While natural gas as a source of power is at present available in many quarters, the realization that producer gas will eventually supplant it has caused careful attention to be given to the development of a design adapted to use producer, blast furnace or other by-product gases.

These engines are designed to operate on the four-cycle principal, and are built in either tandem or twin tandem arrangement. The placing of the two double acting cylinders in tandem results in two power strokes per revolution, giving very close regulation and making it perfectly feasible to operate 60-cycle generators in parallel without using any form of flexible coupling. Where the twin tandem type is employed the power strokes are doubled, and the same effective torque is obtained as in a cross-compound steam engine. The design throughout is massive to allow for the most severe operating conditions, but this necessary strength has not been obtained at the sacrifice of accessibility and simplicity. Following the American custom the overhung crank construction is used, and owing to the tandem arrangement every allowance has been made for longitudinal expansion, the cylinders being permitted to expand or contract with the varying temperature without affecting the engine alignment.

To make the valve gear more simple and reliable spiral gear drive for the lay shaft has been avoided by using spur and bevel gears, and both the inlet and exhaust valves at each end of each cylinder are operated from a single eccentric. All parts subject to wear are fitted with means for taking up such wear, and in all other particulars the aim has been to produce an engine capable of continuous operation day after day. For the development of this line of engines, ranging in capacity from 500 to 4000 hp., the Mesta Machine Company has secured the services of Frederick Ottesen, who has had experience both here and abroad in gas engine design and has spent over a year in the development of the design illustrated.

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The Bethlehem Steel Company, South Bethlehem, Pa., in April produced at its new plant in eight open hearth furnaces 32,000 tons of open hearth steel, which was converted into 22,000 tons of rails and a quantity of special structural shapes. The rails had a large percentage of discard to insure the best wearing qualities. The company's new gray structural mill has been running on single turn for several months, and there is every prospect of the mill going on double turn in the near future, on account of the large number of orders being secured for Bethlehem special structural shapes. In April the company operated about 75 per cent. of its capacity.

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An important merger of Western cement interests has been effected whereby the Cement Securities Company, Denver, Colo., has taken over the Portland Cement Company, Denver, Colo.; Union Portland Cement Company, Ogden, Utah; Three Forks Portland Cement Company, Triden, Mont., and Southwestern Portland Cement Company, El Paso, Texas. The officers of the Cement Securities Company are Chas. Boettcher, president; Whitney Newton, M. D. Thatcher and Jos. F. Smith, vice-presidents; James Pringree, secretary and treasurer; G. W. Bartholomew, assistant secretary.

# The General Electric Company.

The sixteenth annual report of the General Electric Company makes the following income showing for the fiscal year ending January 31, 1908, as compared with the previous year:

| | 1907-8. | 1906-7. |
|---|---|---|
| Sales | $70,977,168.46 | $60,071,882.99 |
| Royalties, dividends, &c. | 1,498,040.67 | 532,246.19 |
| Profit on sales of stocks and bonds | 9,778.93 | 329,702.55 |
| Net profits of security holding companies | ..... | 675,000.00 |
| Total income | $72,484,988.06 | $61,608,831.73 |
| Cost of sales, including depreciation | $65,536,305.06 | $53,106,594.04 |
| Interest on debentures | 362,029.63 | 74,395.01 |
| Total expenses | $65,898,334.69 | $53,180,989.05 |
| Profit for the year | $6,586,653.37 | $8,427,842.68 |
| Patents written off | ..... | 999,999.00 |
| Surplus | $6,586,653.37 | $7,427,843.68 |
| Dividends paid | 5,183,614.00 | 4,344,342.00 |
| Surplus carried forward | $1,403,039.37 | $3,083,501.68 |
| Previous surplus | 15,110,796.77 | 12,027,295.09 |
| Surplus at close of year | $16,513,836.14 | $15,110,796.77 |

The allowance for depreciation of plant for the past year was $3,745,989.06, against $2,834,123.80 for the previous year. President C. A. Coffin says:

"Late in the year there was a sudden and severe shrinkage in the value of all merchandise and materials used by the company, notably copper. All materials, whether raw, manufactured, or in process of manufacture, which were on hand January 31, 1908, were inventoried at the lower prices then prevailing. The book value of such inventories was thereby reduced by about $2,000,000. In valuing the notes and accounts receivable, in amount the largest in the company's history, great care has been exercised and liberal reserves have been established to provide for possible losses thereon. These reserves, and allowances for depreciation of factory plants, and the shrinkage in inventory values have greatly reduced the profits of the company. As a result the amount in excess of dividends upon its share capital, which is carried forward to surplus account is relatively small.

"During the year all the assets and liabilities of the Stanley G. I. Electric Mfg. Company, Pittsfield, Mass., were taken over, and the factories owned by that company at Pittsfield are now a part of the factory plants of this company. In this practical liquidation of the Stanley Company there has been a considerable shrinkage in the valuation of its factory properties, inventories and other assets, thus adding to the otherwise large depletion in the profits for the year.

"In view of the then great expansion in business, the directors deemed it wise, early in 1907, to provide for future development at some point nearer the Central West, in preference to a further enlargement of the plants at Schenectady and Lynn. For this purpose the unencumbered fee of about 700 acres of land adjacent to the city of Erie, Pa., was purchased at a cost, including engineering and other expenses, of $232,301.53. In view of the existing depression the erection of buildings thereon is deferred for the present.

"The various securities included in the stocks and bonds account of the company have been carefully revalued, item by item, with the result that the book value thereof has been fixed at $18,000,089.85."

### The Sales Department

reports that in the 10-year period ending January 31, 1908, sales billed increased from $12,396,093 to $70,977,168, an average increase of 19.8 per cent per year. The sales billed during the year 1907 increased 18.2 per cent. over the previous year. Many important orders received in 1907 are enumerated, and the following statement is made: "The use of electrical apparatus for industrial purposes is extending rapidly, and large purchases of our apparatus have been made during the year for completely equipping mills with turbine and engine driven generators for lighting and power, and with motors of standard and special design for driving machinery of every description." The company now has in process of manufacture for the Commonwealth Edison Company of Chicago and the New York Edison Company a number of turbine generators of 14,000 kw. capacity each, which will be the largest steam driven electrical units ever produced. The business of the foreign department has been well maintained.

### Manufacturing.

Expenditures aggregating $6,350,576.74 were made during the year for real estate, erection of new factory buildings, extensions to existing buildings, additional machinery, patterns, special tools, fixtures, &c.

The following table shows approximately the total area of floor space and the number of employees, as of January 31, during the last five years:

| | Floor space. Square feet. | Employees. |
|---|---|---|
| 1903-4 | 3,700,000 | 17,000 |
| 1904-5 | 4,100,000 | 18,000 |
| 1905-6 | 4,350,000 | 22,500 |
| 1906-7 | 4,770,000 | 28,000 |
| 1907-8 (including Pittsfield Works, formerly Stanley G. I. Company) | 6,460,000 | 20,000 |

The large reduction in orders during the last quarter of 1907 resulted in greatly curtailing the working force.

At the Schenectady Works a building for the manufacture of large apparatus, a blacksmith and boiler shop, an extension to the power house, a wood working plant and an addition for the manufacture of wire and cable, a storehouse and an addition to the porcelain factory were completed, while a building for the manufacture of wiring devices is nearly completed.

At the Lynn Works a building for the manufacture of stationary motors was completed, while a building for the production of meters and instruments, and another to be used as a carpenter shop, pattern shop and for pattern storage, are under construction.

At the Pittsfield Works buildings for the manufacture of transformers, lightning arresters, fan motors and switches were completed, while an iron foundry of 59,000 sq. ft. of floor space is under construction and will be completed and in operation early the coming summer.

The manufacture of incandescent lamps is now carried on at Harrison and Newark, N. J.; Fort Wayne, Ind., and Toledo, Ohio. Increased floor space aggregating 195,000 sq. ft. has been provided during the year, and buildings of 92,870 sq. ft. of floor space are now under construction and will be completed within the next four months.

### Engineering.

On this subject Vice-President E. W. Rice, Jr., makes a report from which the following extracts are taken:

"During the first part of the last year our engineers were fully occupied in supervising the technical details of our greatly expanded business. Upon the decline in business which followed they have had more time to devote to improvements and economies in design of our apparatus. More attention has also been given to the design of special apparatus intended to meet novel conditions and to the extension of our business along profitable lines.

"Our engineers have devoted considerable attention to the design of a line of turbine generators for use with exhaust steam. Such steam turbines are so much more efficient than steam engines when operated by low pressure steam that they can be most usefully employed to supplement steam engines in existing installations. Their use will result in large increases in output without any increase in coal consumption.

"We have sold to the Great Northern Railroad Company four 100-ton three-phase electric locomotives designed to handle all trains traversing the 2½ miles of Cascade Tunnel in Washington. This installation will be especially notable as the first instance of the substitution of electricity for steam on a mountain division of one of the continental railroads. The traffic conditions are peculiarly difficult on account of the grades and tunnels. These electric locomotives, because of their increased speed and better control, will practically double the traffic capacity of the present steam locomotives. Electricity for their operation will be supplied from water power hitherto unused.

"A gas electric car which fully meets the requirements of steam railroad companies for service on branch lines has been perfected. The equipment consists of a gasoline engine driving an electric generator which furnishes current to standard railroad motors. The engine and generator are located in the forward end of an espe-

cially designed car conveniently divided into passenger and baggage compartments, making a complete self-contained unit.

"We have made many valuable improvements in the design of machinery for electric reduction of metals and in apparatus for various industrial applications.

"We have shipped several large motors of special design of about 10,000 hp. capacity each for driving rolling mills, and have received orders for additional euipments.

"Our new tungsten incandescent lamp, which gives more than double the illumination of the carbon filament for the same expenditure of power, has been further developed and has now become a standard commercial article."

**Finances.**

The financial report states that during the year there was expended in acquiring sundry patents, for licenses under patents and in patent litigation, $872,345.67. This amount has been charged to profit and loss, leaving the company's patents, franchises and good will standing at a nominal valuation of $1, the same as at January 31, 1907.

In the past 15 years the total allowance for depreciation and replacement written off has been $21,951,013.93.

The copper mining investment of $2,701,976, shown in the balance sheet, represents the full amount invested in copper mining and milling properties at January 31, 1908, of which $1,129,961.63 is represented by capital stock, and $1,572,014.37 by advances. The principal property therein is that of the Bully Hill Copper Mining & Smelting Company, Winthrop, Shasta County, Cal., including an interest in a railroad and valuable mills, which have recently been put in active operation.

The security holding companies whose stocks and bonds, valued at $5,979,250,17 are owned, are the United Electric Securities Company, Boston; Electrical Securities Corporation, New York, and Electric Bond & Share Company, New York.

The consolidated balance sheet of the company, comprising the Edison General Electric, Thomson-Houston Electric and Stanley G. I. Electric, as of January 31, 1908, is as follows:

*Assets.*

| | | |
|---|---|---|
| Patents, franchises and good will | | $1.00 |
| Cash | | 12,250,720.92 |
| Stocks and bonds | $18,000,089.85 | |
| Real estate (other than factory plants) | 541,900.50 | |
| Notes and accounts receivable | 29,857,726.84 | |
| Work in progress | 1,276,294.22 | |
| | | 49,676,011.41 |
| Merchandise inventories: | | |
| At factories | $18,339,652.06 | |
| At general and local offices | 2,422,678.59 | |
| Consignments | 234,725.16 | |
| | | 20,997,055.81 |
| Factory plants (including all lands, buildings and machinery) | $12,900,000.00 | |
| Copper mining investment | 2,701,976.00 | |
| | | 15,601,976.00 |
| Total | | $98,525,765.14 |

*Liabilities.*

| | |
|---|---|
| Five per cent. debentures of 1892 | $55,000.00 |
| Three and a half per cent. debentures of 1902 | 2,047,000.00 |
| Five per cent. debentures of 1907 | 12,872,750.00 |
| Accrued interest on debentures | 108,791.67 |
| Accounts payable | 1,759,517.47 |
| Unclaimed dividends | 1,469.86 |
| | $16,844,529.00 |
| Capital stock issued | 65,167,400.00 |
| Surplus | 16,513,836.14 |
| Total | $98,525,765.14 |

The statement is further made that the company has no note payable nor is there any paper outstanding bearing the company's indorsement.

The balance sheet of affiliated companies shows assets of $9,149,985.73 and a surplus of $1,515,421.17.

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Reviewing the foregoing report, the *Wall Street Journal* comments upon the manner in which the ratio of cost of production has increased in recent years. The sales of 1907-8 were the largest in the history of the company, but the net earnings were much less than in 1902-3, when the sales were a trifle over half as large. Says the *Journal*:

"The following table gives the sales, cost of sales and ratio of cost to sales of the General Electric Company over the last six years:

| Year. | Sales. | Cost of sales. | Per cent. |
|---|---|---|---|
| 1907-8 | $70,977,168 | $65,536,305 | 92.3 |
| 1906-7 | 60,071,882 | 53,106,594 | 88.4 |
| 1905-6 | 43,146,902 | 37,025,346 | 85.9 |
| 1904-5 | 39,231,328 | 33,528,135 | 85.5 |
| 1903-4 | 41,699,617 | 34,918,426 | 83.7 |
| 1902-3 | 36,685,598 | 28,844,881 | 78.7 |

"It is probable that the poor showing of the General Electric Company in this respect has been due largely to the higher cost of raw material entering into the manufacture of electrical equipment, and competition. If such is the case a turn for the better in the near future can be expected as it appears that the electric companies are now working along more harmonious lines."

## The Mesaba Ore Belt West of the Mississippi.

DULUTH, MINN., May 9, 1908.—The limits of the Mesaba iron bearing belt are being gradually extended west of the Mississippi River. Merchantable ore has been found on section 34 of the township west of the west bank of Pokegama Lake, about 5 miles southwest of Grand Rapids, and considerable drilling is in progress west and south from there. This marks an important advance step in the geological knowledge of the Mesaba formation, for until recently no merchantable ore had been found west from Grand Rapids. Ore bearing formation outcrops were known to exist near Grand Rapids many years ago, and the first explorations ever conducted on that portion of the Mesaba now known to contain good ore were in this portion of the district. But these finds were unsatisfactory in quality. At the time there were no roads, and the tremendous finds in the Biwabik, Mountain Iron and Hibbing locations drove all though of the west range from men's minds. The western extension of the Mesaba to the Mississippi, as proved by the great finds taken by the Oliver Company around Coleraine, recalled to memory this early work, and for two years and more explorers have been busy west of the river.

It is well known that the Mesaba formation sinks under a heavy capping of drift on the west side of the river, and explorers naturally attempted to find it by sinking through this in the general south of west course shown so persistently east of the river. Thus a lot of work was carried forward many miles west, in Cass County and the swampy lake region of glacial till. This was not satisfactory.

More recently the theory has been advanced that the formation in the vicinity of Pokegama Lake bends sharply southward, and on this theory drilling is in progress along the west shore of the lake and reconnoisances have been and still are in progress down the great river itself toward the outcroppings of the Cuyuna District. The work so far done seems to tend toward a corroboration of the tentative theory advanced by the Geological Survey of an association of the Mesaba and Cuyuna as the limbs of a great syncline. The importance of this can hardly be overestimated.

A few miles west of Pokegama drills penetrated a thickness of 700 ft. of drift, though the holes were in the general strike of the range. Half a dozen tracts along the west shore of the lake are now either under option or lease to the Oliver Iron Mining Company and drills are at work. A lease taken a few days ago on the Cavenaugh tract, section 26, a State tract, is looking fairly well, while the Jordin tract, several miles south, is the limit of careful work so far. On the Cavenaugh ore grading up to 55 per cent. or better has been cut in considerable quantity, and it is hoped the other tracts mentioned will show as good. A few miles further west the Tioga Iron Company, composed of Duluth men, has taken lands abandoned by other Duluthians after exploration and a large tonnage of unmerchantable ore has been exposed. Explorations will be maintained in the hope of bettering the grades.

D. E. W.

# CLUTCHES.*

## With Special Reference to Automobile Clutches.

BY HENRY SOUTHER, HARTFORD, CONN.

Clutches have been used since the earliest history of the mechanic arts. It would seem, however, that in general they attracted but little attention until recently, when they have been required in cotton mill machinery, printing presses, electric cranes, power plants and, most recently, in automobiles.

### Positive Clutches.

The positive or jaw clutch can be used only where the inertia of the parts is small. Modifications are made in the angles of engagement between the jaws. The least positive form has the planes of engagement inclined from the direction of motion about 15 degrees. As its tendency under load is to disengage, it must be held to its work by axial pressure, which may be regulated to slip when overloaded. Positive clutches with engaging planes parallel to the axis of rotation must be held to their work to offset the tendency to jar out, but they present no safety features against overload. More positive yet is the undercut jaw clutch, which engages the tighter when loaded; and can be disengaged only when free from load, so as to be rotated slightly in a reverse direction.

In automobiles the positive clutch is used inside the gear box, and operated only while the friction clutch connecting the engine is disengaged. This clutch sometimes takes the form of an external meshing an internal spur gear. Automobile gear changing systems are used that keep all gears in mesh all the time. Each gear carries a positive jaw clutch to be engaged with a mate on the driving shaft. Some have accomplished the same thing by a sliding spline (or hardened ball) on the driven shaft, which engages with the gear hub internally. The starting crank of an automobile is an illustration of an under-cut positive clutch. When applied there is little danger of the clutch slipping off and wrenching the operator.

### Classification of Friction Clutches.

There are a few basic types, involved in all clutches, but an infinite variety of detail of construction and manipulation. Rankine differentiates between friction clutches about as follows: Friction clutch (contracting band), friction cones, frictional sector (invented by Bodmer), friction disk (Weston's invention). Reuleaux illustrates the Ramsbottom clutch as used for rolling mill work. This is a friction coupling in which one flange is squeezed between frictional surfaces by being tightly bolted. The flange A, Fig. 1, is clamped between the wood-lined surfaces of B, adjustment of the bolts being such that the friction will resist normal torque but yield to abnormal. This is perhaps the simplest form of friction clutch.

Reuleaux shows as the next development a cone coupling, the two parts being forced into engagement by screw and handwheel B, as shown in Fig. 2. The angle of the cone should not be less than 10 deg., so that the parts may not become wedged together. With frictional surfaces of iron on iron a coefficient of friction of 0.15 is given. To keep the axial pressure within reasonable limits, he places the mean radius of the cone between three and six diameters of the shaft.

Following the single cone clutch in Reuleaux is a multi-cone, which as shown by Fig. 3, has a series of concentric cone-shaped rings with angles of 20 degrees. It is apparent that the collar would have to resist the pressure and wear due to the axial pressure necessary for proper engagement. Such wear is avoided in heavy machines, or high-speed automobiles by making the axial pressure self-contained on the rotating member, except when the clutch is being disengaged. This modification is shown in Fig. 4, where the screw wheel clamps the two halves A and B together, and the concentric double-faced cones furnish considerable friction at slight axial pressure.

The next clutch shown by Reuleaux, Fig. 5, he attributes to Koechlin. This is of the internal expanding type, three internal clamp pieces, A, fitted with bronze shoes, being thrust out against the enclosing cylindrical drum B, by lever and screw action. There is no danger of wedging in this clutch. Reuleaux next shows a form of axial friction coupling, Fig. 6, the Weston clutch, based on the principle of multiple plate friction. The plates are alternately wood and iron, the wooden ones engaging the outside cylindrical containing-case A, and the iron ones the shaft, B. The plates are pressed together by springs, D, and released by drawing back a collar, C, which releases the spring pressure.

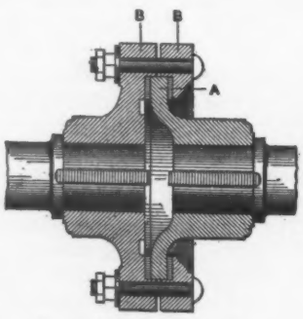



Fig. 1 Ramsbottom Clutch

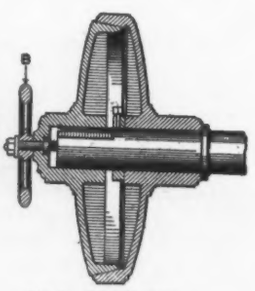



Fig. 2 Cone Clutch

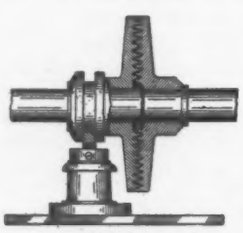


Fig. 3 Multi-cone Clutch

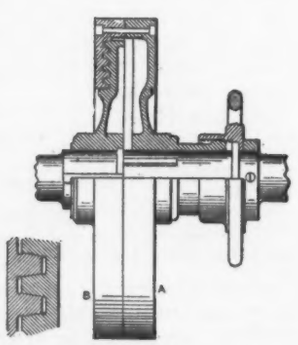



Fig. 4 Self-contained Thrust

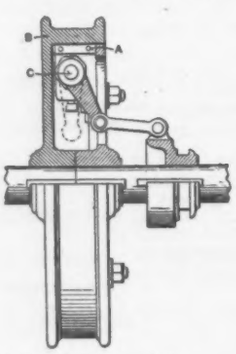



Fig. 5 Expanding Type

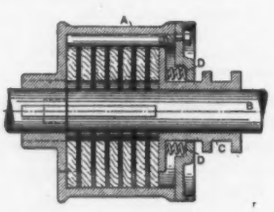



Fig. 6 Weston Clutch

Early Forms of Clutches That Are Typical of the Principles of Construction Still Used.

### Machine Shop Clutches.

Perhaps the simplest machine shop clutch is that in which one flat disk presses against another, the surfaces being leather against iron, bronze against iron, or wood against iron, and the axial pressure enough to drive the maximum load, but yet allow slipping when the load is first applied, to prevent jar.

In Fig. 7 is a modification of the Weston type. It is not multi-disk, there being only one wooden disk, A, attached to the enclosing case B, which is gripped between two iron surfaces, C, keyed to the driving shaft. To prevent drag when disengaged, separating springs D, part the frictional surfaces.

* Abstract of a paper presented at the monthly meeting of the American Society of Mechanical Engineers, Tuesday evening, May 12, 1908, in the Engineering Societies Building, New York.

What was formerly known as the Frisby clutch is shown in Fig. 8. It is not unlike the last one described, except that a flat surface A and cone B are used. The gripping is accomplished in much the same way, and the frictional surfaces are separated by springs when disengaged. This clutch would require less axial pressure for given power transmitted than the foregoing type because of the cone.

The Dodge Mfg. Company, Mishawaka, Ind., has experimental data upon the capacity of its clutches here given. The results were obtained from clutches fitted with maple blocks and calculations are based on a co-

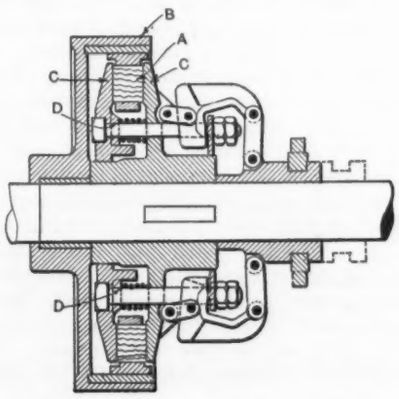



Fig. 7.—A Clutch Made by the T. B. Wood's Sons Company, Chambersburg, Pa.

efficient of friction of 0.37 and a speed of 100 rev. per min.

| Horsepower. | Block area. | Diameter at block. Inches. | Circumferential pull at block center. | Total pressure | Total pressure per square inch. |
|---|---|---|---|---|---|
| 25 | 120 | 16 | 1,960 | 5,300 | 44 |
| 32 | 141 | 18 | 2,240 | 6,000 | 44½ |
| 50 | 208 | 21½ | 2,900 | 7,800 | 37½ |
| 98 | 280 | 27½ | 4,500 | 12,200 | 43½ |

A modern adaptation of the old Koechlin form of internal expanding clutch is shown in Fig. 9, which is from a catalogue of the A. & F. Brown Company, Elizabethport, N. J. It is largely used for very heavy work,

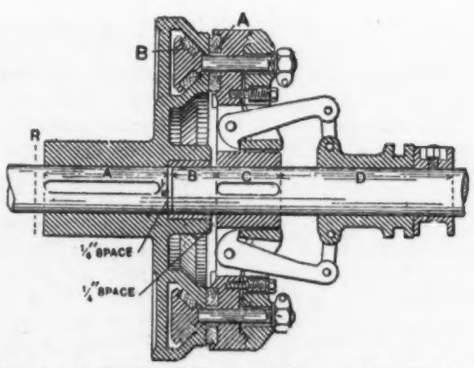



Fig. 8.—A Combined Cone and Flat Surface Clutch.

being made as large as 48 in. in diameter, capable of transmitting 320 hp. at 100 rev. per min. The frictional surfaces are specially prepared wood, against iron.

### Clutches Used in Wire Drawing.

One of the oldest uses of clutches is in wire drawing. The iron drum around which the wire is wrapped, as a rule, contains a clutch within it. Probably the most recent development in this direction is made by the Morgan Construction Company, Worcester, Mass. It is a compound one, the main driving effort being furnished by a wrapping coil on a chilled iron surface, the initial engagement of which is produced by a modified cone or ring slipping down on a cone which drags the free end of the coil into engagement. Once seized, the wrapping continues until tight. In Fig. 10 A is the tapered friction surface of the chilled drum on which the friction ring bears, and below is the coil which is submerged in oil in an annular oil chamber. The drum is 12 in. diameter by 7 in. high, and the coil, which is of soft steel, is 1½ in. square at the large, or driving end and ⅝ in. by ⅝ in. at the small end. The outside diameter of the block is 25 in. It is very important to start wire into a die gradually and smoothly. The following from the manufacturers of this clutch fully describes the qualities and action of it:

Electrically operated wire drawing machines in England have demonstrated that if wire can once be put into motion and the speed increased gradually to prevent breaking the wire, the possible speed of the drawing is almost unlimited. The wire upon which all the work is done becomes exceedingly hot, but the dies remain quite cool.

In order to test the power of our block, we keyed the hub to the shaft. This hub was flattened on one side. On this flat surface we strapped an 8-in. I-beam about 14 ft. long, and at a distance of 12 ft. 6 in. from the center of the driving shaft we strapped a gear to this I-beam in which we could put small

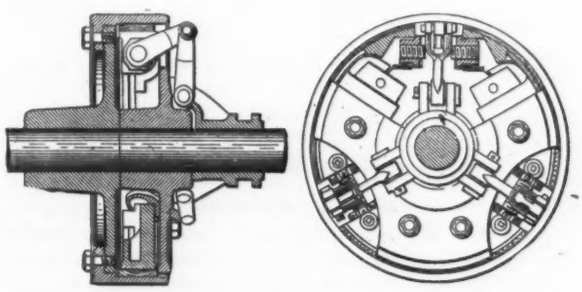


Fig. 9.—A Clutch Made by the A. & F. Brown Company, Elizabethport, N. J.

weights. We first strapped a ½-in. annealed crane chain around the block, fastening one end to the block and one to the machine, with a weight of 500 lb. at a distance of 12 ft. 6 in. from the center of the driving shaft. The chain broke with a clear fracture. All the links of this chain were strained beyond the elastic limit.

We next took a ¾-in. chain and fastened it in the same manner and added weight up to 600 lb., including the weight of the beam. At this point the cast iron quill, which had a bevel gear connected at one end and the chilled friction drum at the other end, ruptured, the crack extending from the top of the flange down the spindle a distance of 16 in. in a spiral of 1½ revolu-

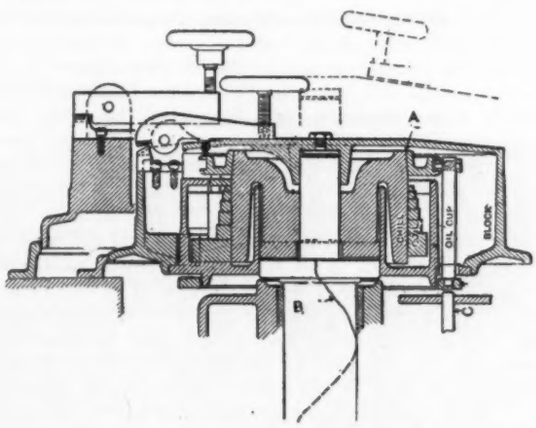



Fig. 10.—A Wire-Drawing Clutch Made by the Morgan Construction Company, Worcester, Mass.

tions, as shown at B, Fig. 10, the fracture showing clean, close-grained iron. This cast iron quill was 5 in. in diameter and cast around a rough turned shaft 2 3-16 in. in diameter. It had a flange at the top 8¼ in. in diameter by 1¼ in. thick.

This was the extent to which we carried out experiments, and under the above conditions the friction clutch did not slip after it had taken hold.

The following calculation gives the pounds pull exerted on the chain:

$$\frac{600 \times 150 \times 49}{22 \times 12\frac{1}{2}} = 16{,}036 \text{ lb. (more or less.)}$$

The pull exerted on the large end of the coil would be equal to

$$\frac{16{,}036 \times 12\frac{1}{2}}{6} = 32{,}761 \text{ lb. (more or less.)}$$

The horsepower of the clutch at 100 rev. per min. under the above conditions would be

$$\frac{32{,}761 \times 3.1416 \times 100}{33{,}000} = 302 \text{ hp.}$$

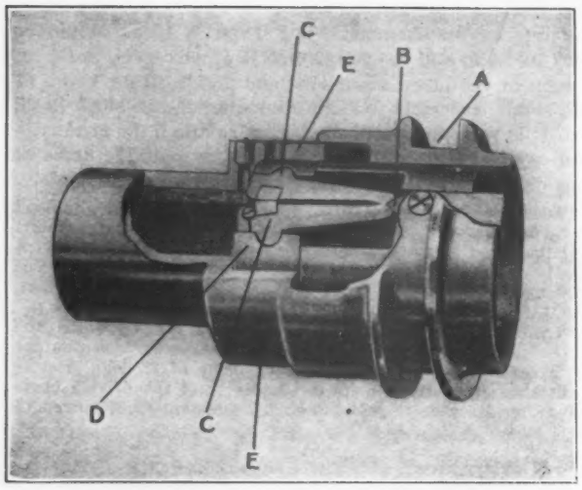



Fig. 11.—A Small Diameter Clutch of Relatively Great Power.

A clutch of this kind has been in service some two years, drawing spring wire largely. No repairs or adjustments have been made during that time.

**Clutch of Small Dimensions.**

A demand has developed for a clutch of small dimensions for a given capacity. This has been met by using hardened tool steel frictional parts instead of cast iron or metal of ordinary strength, which permits exceedingly high normal pressures between the frictional surfaces. Fig. 11 gives a good idea of this form of clutch. It will be seen that the operating collar A forces wedge B between the long arms of the two levers C, spreading them in such a manner as to expand a hardened steel ring D against the hardened steel enclosing drum E. As much as 100 hp. has been transmitted at 1000 rev. per min. with a clutch containing friction rings 5¼ in. in diameter and 1½ in. wide. This form of clutch has been largely introduced into automatic machines, machine shop countershafts and launch engines.

**Clutches with Cork Friction Surfaces.**

In commercial clutches cork has recently been used and apparently with considerable success. It has a high coefficient of friction, probably double that of wood or leather on iron. Its behavior is peculiar because of its elasticity under compression. As a rule the corks are forced into cavities in one of the metallic frictional surfaces, after being previously softened by boiling. They normally protrude above the surrounding surface and engage first. If sufficient pressure is applied they are forced down flush with the metal surface and act with it in carrying the load. Two forms of cork are used, one in its natural condition, the other prepared by compressing small pieces into sheets and blocks of desired shape under very great pressure and enough heat to cause the natural gums of the cork to exude and act as a binder. This prepared cork is more enduring than the natural, Prof. I. N. Hollis of Harvard University has found that being stronger, firmer and yet possessing much elasticity. the coefficient of friction for cast iron on cast iron is about 0.16; for plain bronze on cast iron 0.14, and for cork on cast iron 0.33 to 0.37, the former, 0.33, being the value for the heavier loads. It is claimed that the coefficient of friction for cork is not very much less when lubricated. Cork is very slightly affected by moisture, as compared with maple blocks ordinarily used.

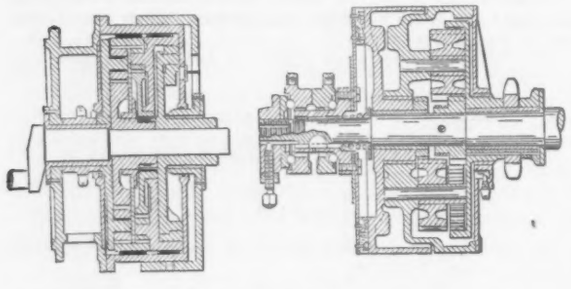


Fig. 12.—Types of Planetary Clutches for Automobiles.

**Automobile Clutches.**

There are almost as many ideas on automobile clutch construction as there are engineers. Adherents are found of the cone type, the expanding type and the multiple disk type; all are old, at least in principle. Perhaps the simplest form is that commonly used for small machines and in connection with the planetary system of gear change. This presses one disk against another, the frictional surfaces being leather, bronze, or copper against iron or steel. Fig. 12 shows two such clutches. The axial pressure is usually furnished by a spring disk; that is, the steel plate which carries the frictional surface, either leather or copper, is caused to operate like a diaphragm spring. The diameter of a clutch ordinarily used to propel a car of 7 or 8 hp. is from 5 to 10 in., the rubbing surfaces being about from one-half to three-quarters of the entire superficial area of the disk. The disk clutch connects with the engine direct and runs at engine speed, the planetary system being used only for low speed and reverse work, actuated by contracting band clutches.

For three or four speeds boxes are used of sliding or change gears, and the clutch must engage and disengage easily, requiring but small axial movement of the operating mechanism, or of the clutch itself. It must be entirely independent of centrifugal force, and able to slip for a reasonable length of time without being destroyed. An important feature in the clutch is the question of its weight, especially as affecting its inertia. A clutch having high flywheel effect spins to such an extent as to cause violent clashing of idle gears. Consequently, clutches are made as light as possible, and the smaller in diameter the better. Any automobile clutch must engage smoothly and without shock to be a success. Clutches exist that can be engaged suddenly and still not jar the passengers, but they do not pick up the load quickly enough on a hill to start the car forward after a change of gears, before the momentum of the car is materially lessened. The clutch designer is, therefore, between two fires; too little slip on one hand and too much slip on the other. It is doubtful if such a problem exists in connection with clutches anywhere else in the mechanical art. The customary location for an automobile clutch is within the flywheel or at least at the rear end of the engine, if the flywheel is at the front end.

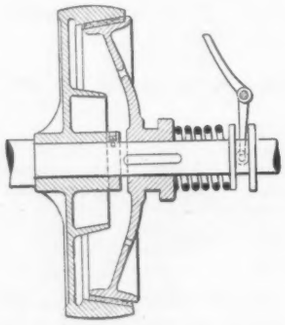


Fig. 13.

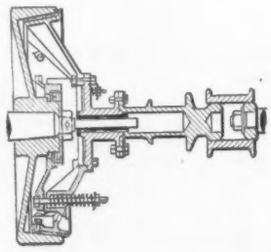


Fig. 14.

Leather-Faced Clutches.

**The Cone Clutch.**

The cone clutch, all things considered, is the best when properly designed and mounted. It has the advantage of engaging and disengaging with small axial motion. Axial pressure may be low because the normal pressure between frictional surfaces is multiplied by the angularity of the cone. Its weight may be small, as the male member may be of aluminum. Its engagement is entirely independent of speed and centrifugal force. No liquid lubricant is needed with attending viscosity, drag and change due to wear and temperature. Disengagement may, therefore, be made perfect. Proper engagment, however, has proved to be difficult, and has caused nearly all the rejections of the cone clutch. It may operate almost as savagely as a positive jaw clutch, or it may refuse to engage, if it does not have the proper combination of angularity, pressure

and lubrication. The cause may not be in the clutch proper; but in the surrounding mechanism. The cone clutch must be absolutely free to center itself and seat itself uniformly, and a pair of free working universal joints must be provided.

Leather riveted on an aluminum cone usually forms one of the rubbing surfaces and gray cast iron the other. It is desirable that the leather be kept soft by neatsfoot or castor oil. With leather ¼ in. to ⅜ in. thick, properly softened, engagement may be sufficiently mild, but an improvement is obtained by placing under the leather at six or eight points on the periphery of the cone flat or spiral springs that cause the leather to engage at these points a little bit before engaging elsewhere. In some instances rubber buffers have been used under the leather in place of springs. The other frictional surface bearing against the leather is, as a rule, a cast iron flywheel. The construction surrounding the clutch must be such that no unusual supply of lubricant can find its way to the frictional surfaces of the clutch. The leather surfaces gradually become dry and hard, requiring the application of castor or neatsfoot oil, but not very often. With proper usage, cone clutches with leather faces seem to last indefinitely.

There is a variety of opinion as to the proper cone angle. Various authorities have placed it all the way

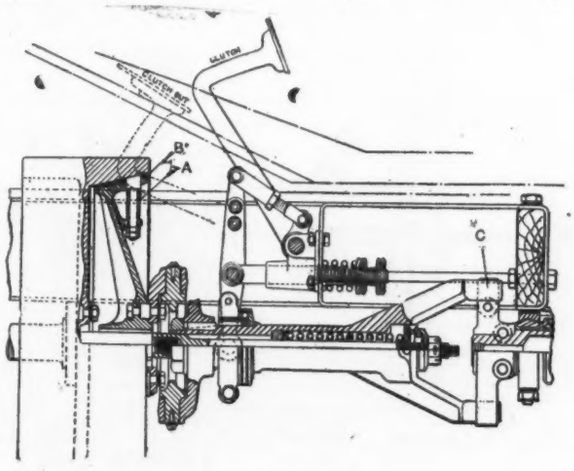



Fig. 15.—A Cone Clutch for a 50-Hp. Automobile.

from 7 to 20 degrees. The metal-to-metal cone clutch is a good one. It may be made smaller in diameter and with a sharper angle, say 7 degrees, without seizing. Another form of cone clutch has an aluminum male member of about 12 degrees angle bearing against cast iron and with cork inserts in the face of the male member. This is not easily affected by a lubricant and may be run with copious lubrication.

Fig. 13 shows about the simplest form of leather-faced cone clutch. Modifications of this are many. Fig. 14 shows a clutch of the same principle, but in place of one strong actuating spring surrounding its axis, it has three weaker spiral springs nearer the periphery of the male member. Fig. 15 is a clutch used for a 50-hp. car, with a cone angle of 13 degrees, a diameter of about 16 in., a total frictional area of about 128 sq. in., and axial pressure of 375 lb. resulting from spring. The small spiral plunger spring, A, underneath the leather face, B, is to make it pick up its load more quietly and smoothly. A form of slip-joint back of the clutch is shown at C, which, although it does fairly good work, is not on the whole as satisfactory as the double-toggle universal joint.

In direct contrast to this clutch is the one shown in Fig. 16, where the diameter of the cone is very much less, not over 10 in. This is a clutch used in a car developing 30 hp., and at times as high as 36 hp. The clutch angle is 13 degrees, the frictional area 96 sq. in., and the spring pressure 400 lb. At the bottom of this engraving a sketch shows the spiral spring plungers underneath the leather.

### Modifications of the Cone Clutch.

In the *Commercial Motor*, October 31, 1907, is shown what may be called a multi-cone clutch, Fig. 17. When

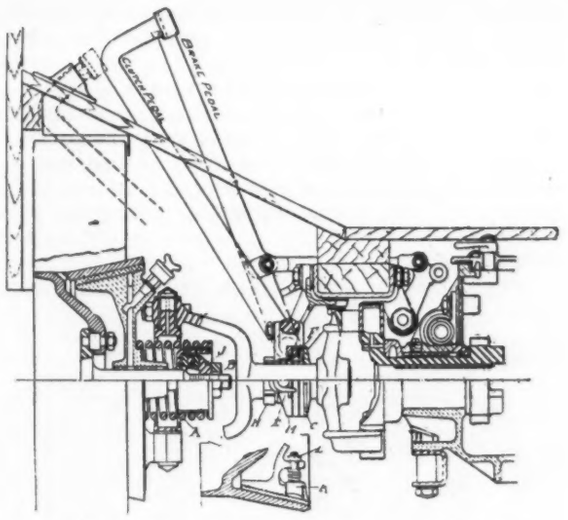



Fig. 16.—A Small Diameter Clutch for a 30-Hp. Car.

the clutch engages, the smallest cone seizes first, commences to revolve and twists the spiral spring between the next two clutches, which draws them together and brings the two outer cones into action; the idea is that the small clutch shall slip, tend to accelerate the car, the medium clutch do the same, and when the large clutch comes into play the three combined pick up the load and move the car. Another simple clutch embodies the tractrix curve, and is of such a form that the relation of pressures and peripheral speed should produce uniform wear at all distances from the center. It is claimed that the clearance required to complete the engagement is small; that there is no wedging action between the clutch members and no chance for it to bind, and that it is simple and particularly adaptable to metal-to-metal clutches. It is in effect a flat disk clutch which would certainly require heavy axial spring pressure. The so-called inverted cone clutch has a reversed cone contained in an extension, built on the flywheel. When the cone is disengaged it moves toward the engine, exactly reversing the action of the foregoing type. This clutch differs very slightly in its efficiency from the direct acting cone, and may be kept free from dirt and oil more perfectly than the other form.

### Expanding Band Clutch.

The internal expanding band or ring clutch has had many exponents, but is open to centrifugal effects. At high engine speeds the operating levers have in many cases been so arranged as to lower the normal pressure between the frictional surfaces, resulting in a slippage and arbitrarily fixing a maximum limit of speed for the car on the high gear and of horse power possible to develop in low gear. Fig. 18 shows a clutch operating on the same principle, driving a 16-hp. car, the spring pull being 50 lb., the diameter of the clutch about 9.5 in., and the width of the band 2 in. This clutch operates very softly, but releases at high engine speeds. It operates best with a certain definite quality and quantity of lubricant, which, if varied to any great extent, causes slipping or sharp biting. Its tendency is to unwrap and expand against the enclosing cylinder as soon as friction is applied to it.

The successor of this clutch, shown in Fig. 19, is designed to overcome the centrifugal releasing effect of levers in the clutch shown in Fig. 18. The total area of

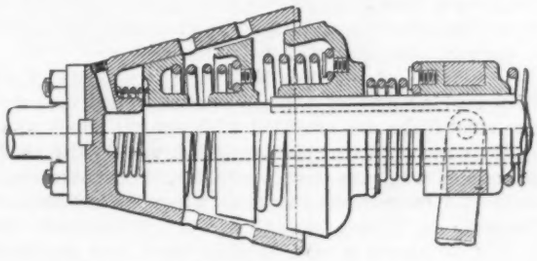


Fig. 17.—A Multi-Cone Automobile Clutch.

the clutch is 36 sq. in., and the two springs are of 125 lb. tension each. This clutch was a success, but was finally given up in favor of a simple cone.

**Contracting Band Clutches.**

Few approve the contracting band type of clutch, unless the contracting spiral be so classed, and perhaps it ought to be. Fig. 20 shows a contracting band characteristic of the Mors cars. A leather lined flexible steel band contracts against a steel cylindrical band bolted to the flywheel. Clutches of this character are seldom found, except in two-speed cars.

Fig. 21 shows a popular clutch which uses a wrapping spiral spring, of either hard or soft metal, shown in cross section, wrapping on a drum. The greatest difficulty of this clutch has been the adjustment of the clutching force. With too little lubrication it grips too savagely; with too much it will not pick up its load rapidly enough. The disengagement is not very complete at the best.

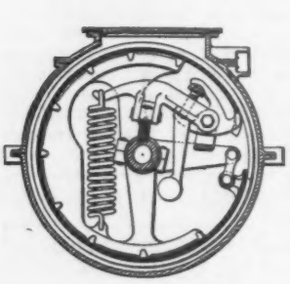


Fig. 18.

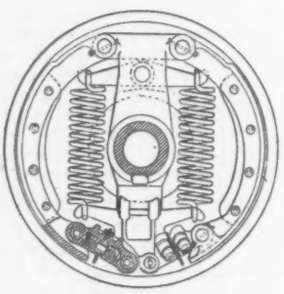


Fig. 19.

Expanding Band Clutches.

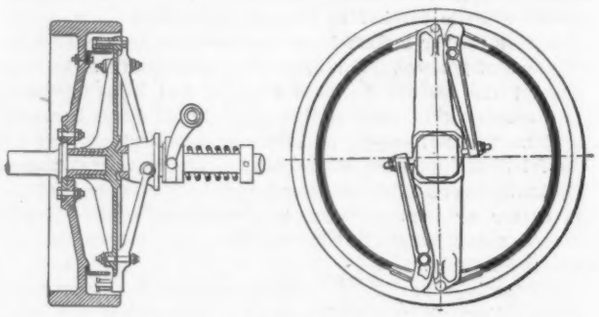


Fig. 20.—A Contracting Band Clutch Used on the Mors Cars.

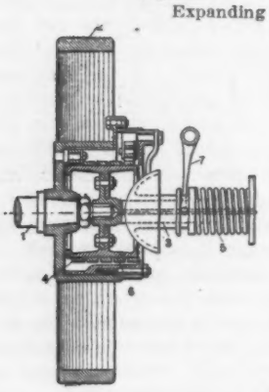


Fig. 21.—A Contracting Spiral Band Clutch.

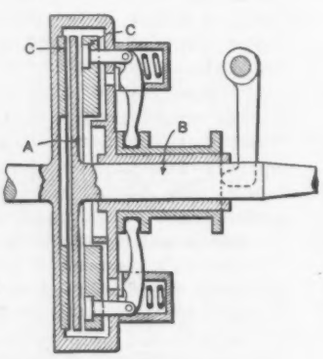



Fig. 22.—The De Dion Single-Disk Clutch.

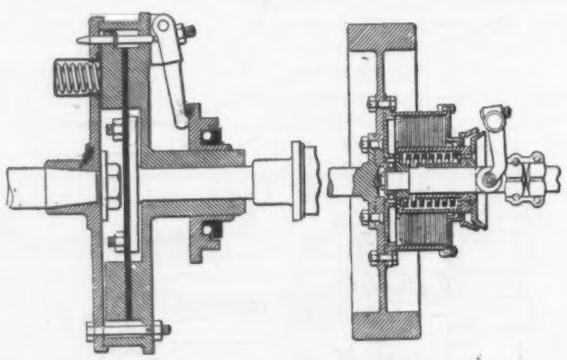


Fig. 23.—Another Single-Disk Clutch.

Fig. 24.—A Multi-Disk Automobile Clutch.

**Disk Clutches.**

The De Dion single disk clutch has a disk, A, Fig. 22, on the driven member, B, which is clamped between two disks, C, on the driving member or flywheel. Separating springs make disengagement perfect, and either single or multiple springs cause the proper engagement. Fig. 23 shows the same kind of a clutch, in which the springs are on the front of the flywheel instead of the rear. Cork inserts are being used in this clutch to considerable advantage.

Another popular form is the multi-disk clutch; an elaboration of the Weston clutch already referred to. This is indicated clearly by Fig. 24, the alternate plates of bronze and steel are attached to the driving and driven parts, and are pressed together by a powerful spring. The principal problem in connection with the multi-disk clutch as a type is its proper lubrication. Cold and heat affect the operation, the lubricant in summer being thicker than can be permitted in winter.

One form of multiple disk clutch consists of steel disks rubbing against a special bronze rolled into sheets. The steel disks are provided with several small tongues on the outer periphery, bent one side sufficiently to come in contact with the next steel disk, for separating the disks and overcoming the drag when the clutch is disengaged.

Fig. 25 shows a nest of disks used in a well-known multi-disk clutch. The U-shaped separating springs are plainly visible. These force like disks apart when the spring pressure is released, overcoming the natural tendency of the oil to cause them to adhere. Some disk clutches are forced apart in a similar manner by little spring shaped strips struck up from the disks themselves. Another form of this same type of clutch is shown in Fig. 26. Comparatively few disks are used, and the spring pressure is very heavy. A type of disk clutch consisting of all steel disks with alternate ones faced with leather is operated without any oil, the leather being softened like that of the simple cone clutch. The slip required to start smoothly is often sufficient to create enough heat to destroy the leather, but this clutch is extremely efficient in transmitting power. In the matter of number of plates in the disk clutch designers differ. Some use as many as 50 or 60 thin plates, and others as few as six or eight.

One ingenious application of the multiple disk clutch has been made by the Sturtevant Mill Company, Boston; the pressure on the disks is brought about by centrifugal force acting on weights so arranged as to press the tighter with increased velocity. In Fig. 27 one of the weights is shown at W. This weight operates against a spring, A, which prevents it flying out and gripping at too low an engine speed. Once this spring pressure is

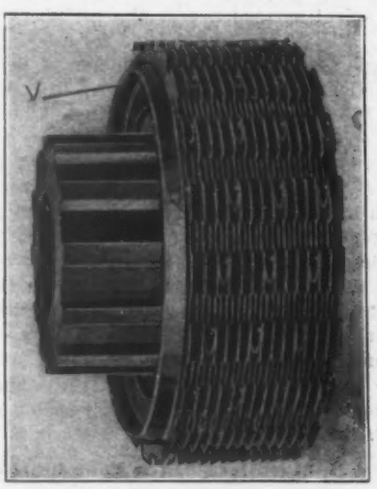



Fig. 25.—A Nest of Disks from a Hele-Shaw Multi-Disk Clutch.

overcome, the disks are pressed together. At low engine speeds the gripping tendency would be small. It would, therefore, not be possible to develop high torque at low speeds, but it is almost impossible to stall an engine by applying this clutch too quickly; it does its own releasing

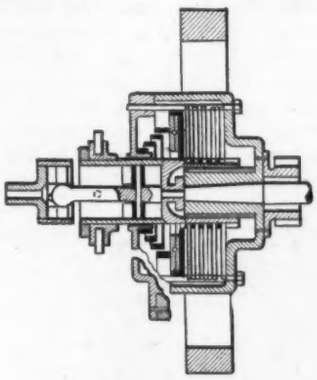


Fig. 26.

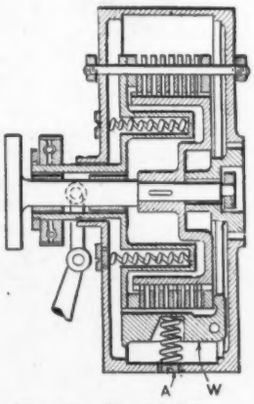



Fig. 27.—Sturtevant.

Multi-Disk Clutches.

so promptly and automatically. With the automatic Sturtevant multi-disk clutch it has been found experimentally that, for the maximum slip speed usual in automobiles, 15 to 20 lb. per sq. in. pressure is safe, and that lubricated cast iron disks scarcely wear out the tool marks after many thousands of miles' use.

A modification of the multi-disk clutch in which the cone and the disk are combined is the Hele-Shaw. Fig. 25 shows a set of disks from such a clutch. Careful

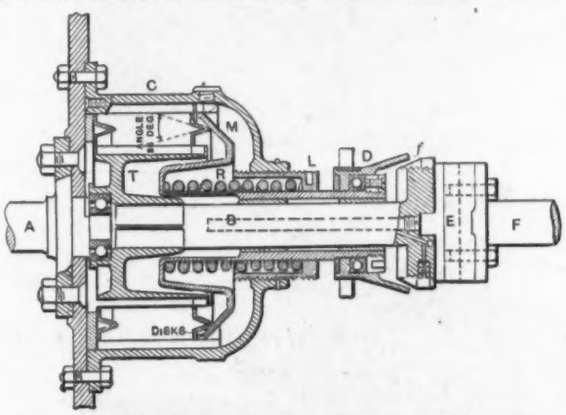



Fig. 28.—Section of the Hele-Shaw Clutch.

scrutiny reveals a V-shaped circular impression struck in the end disk. Fig. 28 better shows the V-shape of the disks. The female cone, D, bears on the male cone, *f*, when the clutch is thrown out, thereby checking the spinning tendency of this clutch, or, if the viscosity of the oil is heavy, holding it quiet during the changing of gears. In place of the entire surface of the disks bearing, only the V portions engage. This clutch is copiously lubricated and the engaging portions are perforated with holes so that the oil may circulate quickly as they are engaged and disengaged. The power transmitted by various spring pressures is given in Fig. 29, and Fig. 30 shows the character of the curve depending upon horse power and pressure of springs. One-thousand horse power is being transmitted by one of these clutches running at 700 or 800 rev. per min. and measuring 18 in. in diameter between the V's in the disks. The number of plates varies with the power transmitted, the diameters remaining the same within certain limits. The principle involved is that the thickness of the pack of plates shall not exceed the diameter of the plate. When this becomes necessary to transmit a load, the plates are increased in diameter, fewer of them being used.

The materials for disk clutches in general have been various; namely, steel on steel, steel on leather faced disks, steel on bronze and steel disks with cork inserts. Steel disks against steel have become badly heated and cut enough to make the clutches inoperative. Steel against bronze does not seem to cut.

A pneumatic clutch has been developed which has a plain leather-faced disk pressing a metal plate as indicated in Fig. 31. The clutch is located within the flywheel and the air is forced from the pump through a small air cushioning tank and from there it enters the clutch through the hollow crank shaft B and an air valve. The air deflects the leather diaphragm C, causing it to bear against the metal disk D, which can have a slight endwise motion, and forces it against the fiber disk E permanently riveted to the casing F, which latter is bolted to the flywheel. The maker, the Northern Motor Car Company, Detroit, gives the following in regard to the clutch and its air pump:

The lubrication of the pump became a problem, because we did not want the oil thrown into the air clutch, so an opening was left from the base of the pump into the upper part of the crank case, and this air seemed to be sufficiently oily to lubricate the walls of the pump without causing trouble in the air valves. This construction is extremely simple and cheap as far as the air clutch itself is concerned, but as a whole the air clutch is expensive, from the fact that it is necessary to build a very fine air pump and air valves, and conduct the air through

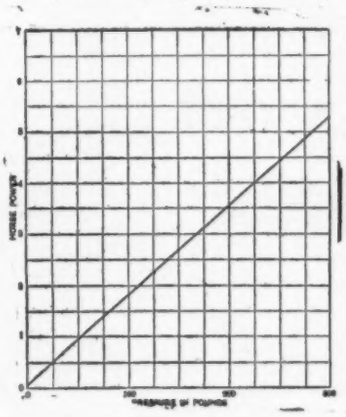


Fig. 29.—Power Chart for the Hele-Shaw Clutch.

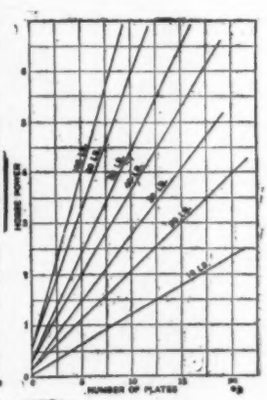


Fig. 30.—Chart for Spring Pressures and Horsepower.

tight joints in the piping, and also drill out the crank shaft throughout its entire length to admit the air into the clutch, all of which costs much more than a good cone clutch.

Hydraulic clutches have been used but are not popular. The magnetic clutch is in use and is fairly successful. One complication arises in the fact that one of the parts of the magnet has to rotate continuously, the gears being always in mesh; consequently the exciting current has to be carried to it by a brush. These

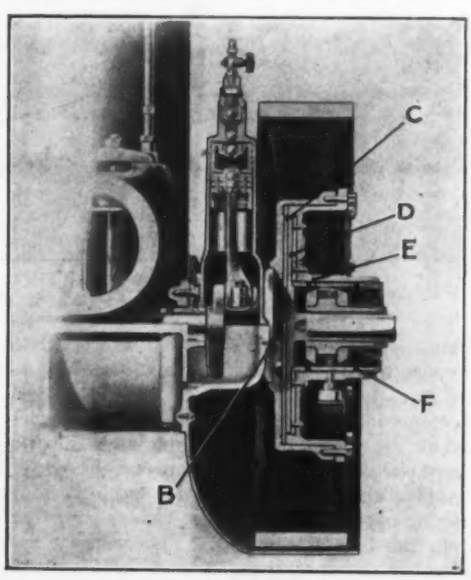



Fig. 31.—An Air-Operated Disk Clutch Made by the Northern Motor Car Company, Detroit, Mich.

clutches do not heat badly, but they seize rather savagely unless carefully controlled. A considerable current is also necessary on the car for the operation of the clutch. These complications rather interfere with its extended use.

### Car Damage from Car Dumpers.

The use of car dumpers for unloading ore at blast furnace yards and for loading coal into vessels at Lake Erie ports is said to have resulted in frequent damage to cars. The *Railway Age* says, concerning the matter: "The use of the car dumper is becoming more general as new and larger docks are constructed, and there has been some co-operation between the car builders and the manufacturers of the dumping machines, having special reference to the unnecessary damage to the lading. It is found also that there are some points in the car construction which should be carefully looked after, so that they will go through the dumping operation without damage to projecting parts. This provision is sometimes neglected by car builders, who do not know of the difficulties with car dumpers in the past, and railroad companies which ought to have been informed have specified detail parts and appliances to be placed on cars which were later damaged or mutilated by the dumpers. While the matter is apparently of only local importance, yet it sometimes happens that a foreign car, not specially adapted to the dumping operation, is used for several trips with ore or coal in the lake trade, and it appears that specifications covering the special features in coal and ore cars which dumping service demands should be prepared for the use of the car manufacturers."

Recently 2500 tons of steel rails for use on the Grand Trunk Pacific Railroad, from the Prince Rupert end, were shipped by a long route. They were made at Pittsburgh and shipped to New York, thence across the Atlantic, through the Suez Canal and Indian Ocean and across the Pacific to Vancouver, B. C.

## The Effect of Work and Time on the Properties of Mild Steel and Iron.

At the last two meetings of the Iron and Steel Institute papers were read by C. E. Stromeyer of Manchester, England, on "The Aging of Mild Steel." By means of extended and exhaustive tests, the writer showed that many steels deteriorate with age and tried, with only partial success, to develop some test that would disclose this aging property. A paper also bearing on this subject has recently been read before the Northeast Coast Institution of Engineers and Shipbuilders. The writer, John H. Heck, is vice-president of the institution and is actively connected with Lloyd's, and his paper is entitled "Notes on the Effect of Work and Time on the Properties of Mild Steel and Iron."

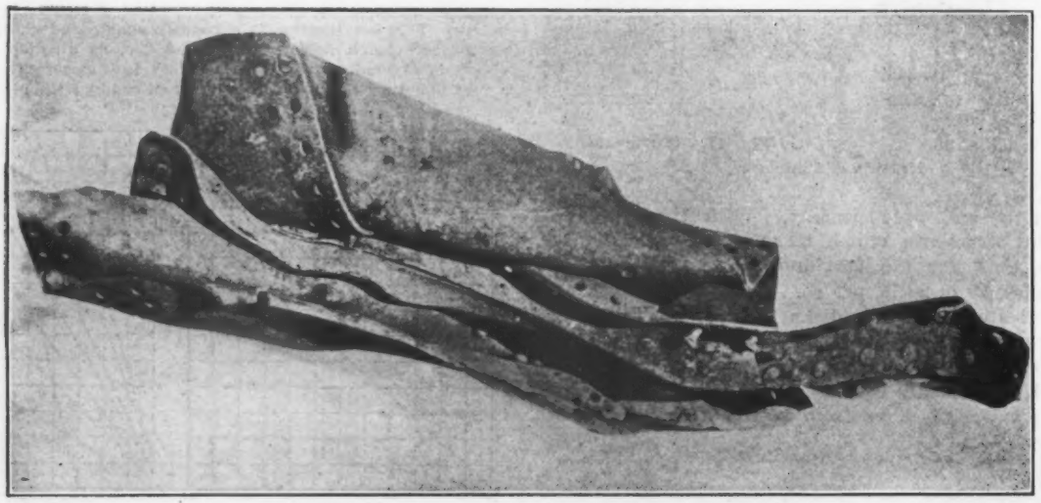


Fig. 1.—Damaged Ship Plate from Steamship Rotterdam.

Fig. 2.—Damaged Ship Plate from Steamship Rotterdam.

In his introduction he speaks of the rapid growth in the use of mild steel for constructional work, and says it is greatly due to the care taken in manufacture and the uniform and regular testing to which it is subjected. The northeast coast of England is one of the largest shipbuilding districts and is also a very large repairing district. It is, therefore, a common experience to see on a large scale how well mild steel stands the test of time, severe damage, and wear and tear. Vessels come to the dry docks for repairs owing to damage caused by stranding, collision, or other causes, with plates and angles much bent and distorted. Examples are shown in Figs. 1 and 2, the steel looking like a sheet of crumpled note paper.

In connection with the steel boilers, working with high pressure, furnaces and plates are also found much

distorted and strained without any serious consequences having followed. Such a furnace is shown in Fig. 3.

The sight of such vessels and boilers, which have sustained such damage, brought safely into dry dock for repairs is a fact which speaks for itself. It compels one to feel that there can be no deterioration. In the early days of steel making in this northeast coast district, Mr. Heck says he was engaged in testing the material used in vessels and machinery registered under Lloyd's. From time to time tests have been made on samples of old steel which had been in use for years in different parts of the hull and machinery of steam vessels. The samples were sheared from plates, angles, bars, &c., which had been removed owing to damage, corrosion, pitting, wear and tear and other causes.

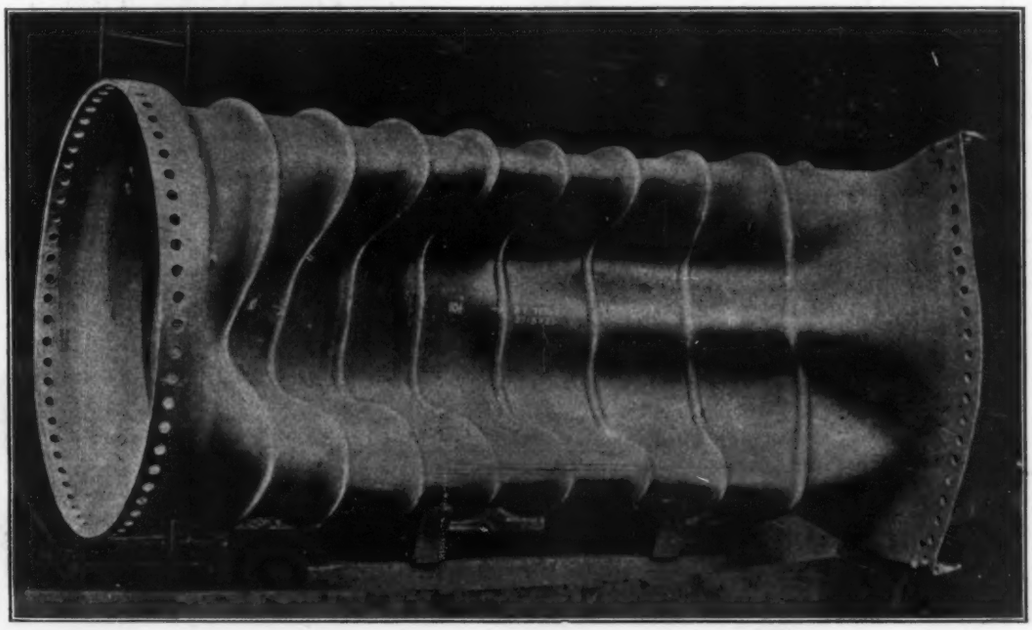


Fig. 3.—An Overheated Boiler Furnace.

In the two following tables are some of the results obtained, typical of the whole series:

*Table 1.—Acid Open Hearth Boiler Steel.*

| No. | Description and cause of removal. | Age in years. | Ultimate stress. | Elongation in 8 in. | Cold bend test. |
|---|---|---|---|---|---|
| 5. | Furnace, overheating | 12 | 63,168 | 22 | 180 |
| 6. | Furnace, overheating | 12 | 58,912 | 27 | 180 |
| 7. | Firebox, corrosion | 8 | 61,152 | 28 | 180 |
| 10. | Back end plates, new boiler fit'd. | 25 | 62,048 | 27 | 180 |
| 11. | Back end plates, new boiler fit'd. | 25 | 63,840 | 24 | 180 |
| 19. | Front tube plate, corroded | 23 | 61,600 | 27 | 180 |
| 23. | Boiler shell, wasted | 16 | 70,336 | 25 | 180 |
| 24. | Boiler shell, wasted | 16 | 71,456 | 23 | 180 |
| 27. | Boiler shell, wasted | 23 | 60,256 | 24 | 180 |

*Table 2.—Acid Open Hearth Ship Steel.*

| | | | | | |
|---|---|---|---|---|---|
| 1. | Forecastle shell, damage | 9 | 65,632 | 20 | 180 |
| 3. | Flor plate, damage | 11 | 62,944 | 19 | 180 |
| 4. | Floor plate, damage | 11 | 61,600 | 19 | 180 |
| 7. | Shell plate, damage | 9 | 62,048 | 10 | 180 |
| 8. | Shell plate, damage | 11 | 64,064 | 10 | 180 |
| 10. | Shell plate, damage | 12 | 67,424 | 24 | *145 |
| 12. | Deck plate, much corroded | 13 | 58,688 | 14 | 180 |
| 13. | Deck plate, much corroded | 13 | 61,376 | 12 | 180 |
| 16. | Shell plate, damage | 11 | 69,888 | 20 | 180 |
| 20. | Shell plate, damage | 18 | 63,392 | 20 | 180 |
| 22. | Shell plate, damage | 13 | 57,344 | 18 | 180 |
| 27. | Shell plate, damage | 8 | 63,392 | 22 | 180 |

* Broke.

It is of value to note that the samples give ultimate stress results practically within the limits according to which the material was made. The elongation results and the bend tests also show the good quality of the material, even after the lapse of so many years and such severe service. G. B. W.

**German Tests of Old Bridge Material.**

Apropos of the above discussion, the *Engineering News* prints the following:

Tests of old bridge metal to determine whether any deterioration due to long service could be noticed have been made on several recent occasions by the German railroad systems. This has been done by taking tension test specimens from different parts of the webs and flanges of girders taken from bridges removed after long service. The specimens from the end of a flange, which had been subjected to very much lower stresses than those from the center, would, therefore, represent more nearly the original metal as concerns absence of deterioration due to stress, and thus some estimate of the service deterioration could be formed by comparing the results of tests from center and end of flange, &c. A recent set of tests was made by the Königsberg division of the Prussian State Railways on metal from bridges which had been in service for 47 years on a well traveled line. The results, reported in the *Zentralblatt der Bauverwaltung*, and transformed by us into American measure, are as follows:

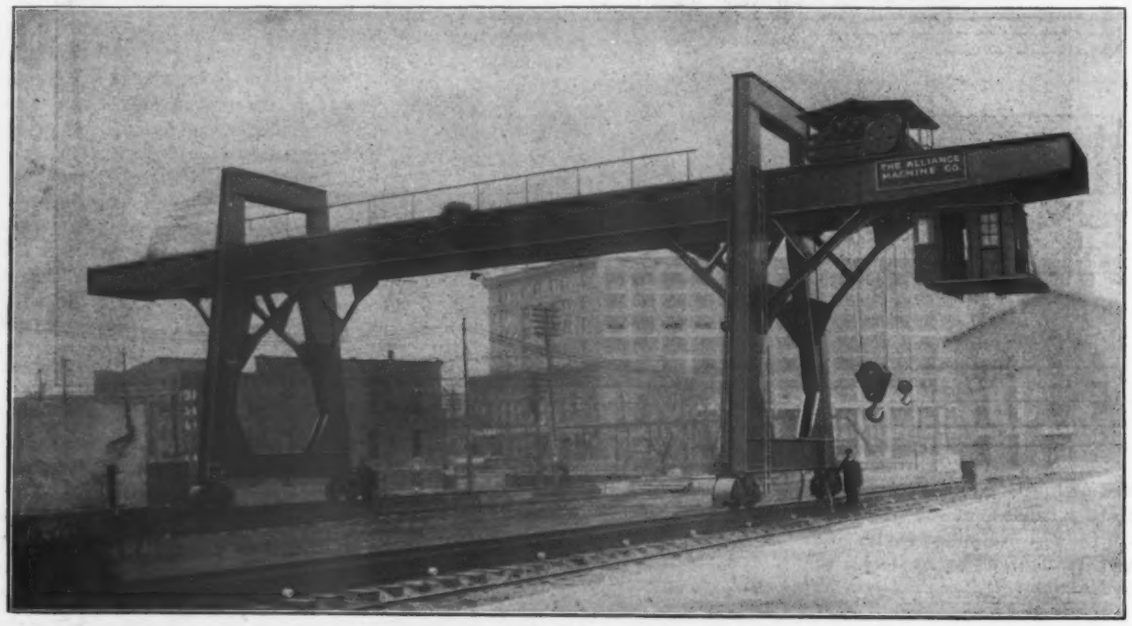
| Source of specimen. | Ultimate tensile strength. Pounds per square inch. | Elongation. Per cent. |
|---|---|---|
| Upper flange angle of floor beam: | | |
| End of beam | 47,000 | 15.0 |
| Center of beam | 46,700 | 11.7 |
| Web plate of floor beam, at mid depth: | | |
| End of beam | 45,400 | 11.5 |
| Center of beam | 44,100 | 7.5 |
| Lower flange angle of floor beam: | | |
| End of beam | 46,700 | 16.5 |
| Center of beam | 49,000 | 16.5 |
| Upper flange angle of stringer: | | |
| End of beam | 48,800 | 18.3 |
| Center of beam | 49,200 | 20.0 |
| Web plate of stringer, at mid depth: | | |
| End of beam | 43,200 | 8.5 |
| Center of beam | 41,600 | 6.5 |
| Lower flange angle of stringer: | | |
| End of beam | 48,100 | 11.0 |
| Center of beam | 45,200 | 11.0 |

These results indicate no recognizable difference between the specimens most and least subjected to changes of stress in service, and like some preceding tests of the same kind made in the last few years by the German railroad administrations they indicate that no deterioration in physical properties was produced in service.

Nicholson & Co., operating the Pittsburgh Chain Works at Hawkins Station, near Pittsburgh, have completed the erection of a new 42 x 50 ft. shop, to be equipped with eight forges for making chain forgings. This building is designed for future growth and its equipment with the 26 forges in the old plant enables the firm to turn out quite a tonnage of hand made chain. Additional boiler capacity has been installed and two more coke ovens are in course of erection.

## An Alliance Electric Cantilever Gantry Crane.

The freight which the railroads are required to handle differs widely in nature and often involves heavy and bulky pieces, such as fabricated structural members, large machines and castings, blocks of stone and marble, and an endless variety of other materials. The transportation, once the freight is on the cars, presents no especial difficulty, but the loading and unloading is often a problem, which, if one railroad is not equipped to cope with it, means the loss of business to another having better facilities. It is important that the cars be not compelled to stand long idle, for if they do the demurrage charges run up, and rapid means of charging and discharging the cars are essential. The shipper generally has the means of expediting the loading, but the facilities at the destination are not likely to be so good and it becomes desirable for the railroads to provide efficient means of transferring loads at all important centers. Probably the best means of loading and unloading freight is by an electric traveling cantilever gantry crane. The crane can unload a car of freight in a very short time and thus tends to relieve congestion in freight yards. In times when cars and tracks are in great demand and the consignee is not ready to receive his heavy freight, the cars can be unloaded and their contents piled up along side the railroad tracks until the consignee is ready to receive them, when they can be loaded on his trucks.




The Electric Cantilever Gantry Crane in the Lake Shore & Michigan Southern Railway's Toledo Freight Yards, Built by the Alliance Machine Company, Alliance, Ohio.

The illustration herewith is of a 25-ton electric gantry crane with double cantilever ends, designed and built by the Alliance Machine Company, Alliance, Ohio, for the Lake Shore & Michigan Southern Railway Company for use in its freight yards at Toledo. This crane spans two lines of railroad tracks between its supporting legs and leaves room for a wide double wagon roadway between these tracks, while the cantilever arms are each long enough to cover another track and a wagon roadway. The supporting legs are built in the shape of the letter A, but have a clear opening between the diagonal members, as is plainly shown, to permit the crane to pick up a piece of freight from a car on any of the railroad tracks and transfer it along the bridge, and, if necessary, through the supporting legs out on one of the cantilever ends to deposit it on a truck beneath. The supporting legs of the crane are designed so that no part projects more than 24 in. beyond the center of the runway rails, that proper clearance may be maintained between the railroad tracks. Local conditions, of course, may vary the relative location of railroad tracks and wagon roadways.

The crane is supported on eight track wheels mounted on equalizing trucks, so as to permit the crane to accommodate itself to irregularities of the runway tracks. The crane shown has a main hoist with a lifting capacity of 25 tons at 12 ft. per min. and an auxiliary hoist capable of lifting 5 tons at 60 ft. per min. The speed of the trolley is 125 ft. per min. and that of the bridge 250 ft. per min. The span, center to center of the runway rails, is 55 ft. and the length of the crane girders over all 103 ft. The distance from the under side of the crane girders to the top of the track rails is 23 ft.

These cranes are built to be operated on either direct or alternating current.

## The Bethlehem Steel Company to Make Power Producing Machinery.

The Bethlehem Steel Company, South Bethlehem, Pa., announces that, in addition to its present lines of heavy hydraulic presses of all descriptions, pumping engines, large machine tools for special purposes, &c., it has engaged in the business of manufacturing power producing machinery of the internal combustion or steam turbine type, as the best needs of the market require. The company's facilities for the selection and control of needed materials are unequaled, due to the fact that it is the only American concern, in this line of business, which combines a large steel plant with great machine shops. Controlling its ore deposits, with its vast experience in the manufacture of all grades of steel, iron and alloy products, it is in a unique position for the selection of materials and the control of each step in the process of manufacture best adapted for the various parts of the machines.

The character and amount of special high grade work of all descriptions done by the Bethlehem Steel Company for the United States Government and for commercial lines have given it a reputation for fine workmanship that is not excelled in the United States. This should count heavily in its favor in entering the new field. The power department will be controlled, as manager, by Arthur West, who has had admirable engineering experience in this line, having been successively assistant chief engineer of the Allis-Chalmers Company, manager of the pumping engine department of the same company, and for the last four years chief engineer of the Westinghouse Machine Company.

Last week the courts at Pittsburgh handed down a decision awarding $40,000 to be divided equally between William G. Park and the Union Trust Company, for acting as receivers for the Clairton Steel Company. They had sued for $150,000 each for services.

## The New Morgan Combination Pointer and Shear.

The machine for use in wire mills, shown in Fig. 1, is a new design which combines the functions of a rod pointer and a light shear, and costs but slightly more than would the latter alone. It will cut and point rods up to a maximum of 5-16 to 7-16 in. diameter, depending upon the stock. The machine, which is built by the Morgan Construction Company, Worcester, Mass., is self-contained and can be adapted for independent motor drive if desired. The rolls are of built up construction which permits the replacing of worn grooves by substituting new sleeves. The link motion of the shear is simple and permits of continuous running with freedom from repairs. Safety of operation has been effected by limiting the opening of the shear jaws and by protecting the working parts.

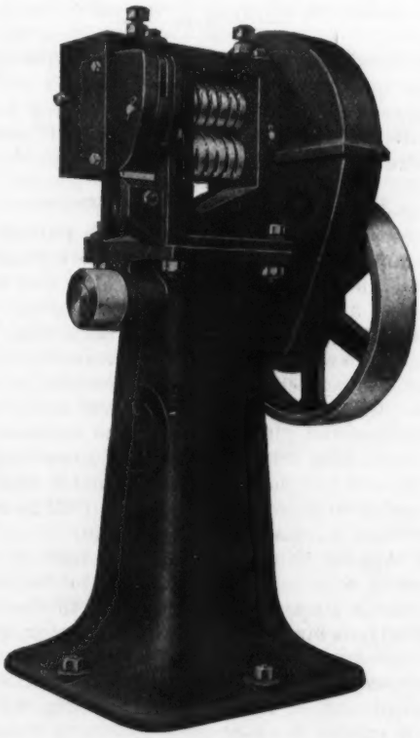


Fig. 1.—The New Combination Pointer and Shear Built by the Morgan Construction Company, Worcester, Mass.

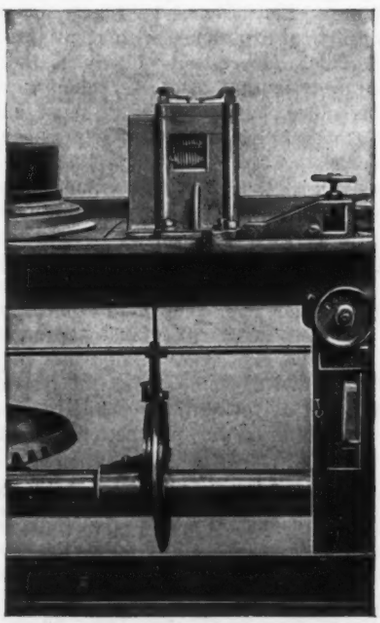


Fig. 2.—A Pointer Without the Shear Attachment, as Mounted on a Drawing Frame.

The main frame, mounted upon a pedestal, consists of a heavy housing at one side of which is cast the shear frame. The shear is of the direct plunger type operated from the end of one of the rolls by a mechanism designed particularly with reference to continuous operation. Both knives can be quickly removed for sharpening. The arrangement is such that it is impossible to introduce between the jaws a rod exceeding the capacity of the knives, a protection unusual in shears of the alligator jaw type. The window in the housing through which the rod is thrust between the rolls for pointing is within convenient working distance, and has been made as large as consistent with strength to give the operator plenty of freedom of action. The rolls are provided with sleeves which are grooved and then hardened and ground before slipping upon their arbors. New sleeves may be obtained when the grooves are worn and easily substituted for the old ones.

The drive is by belt either from an overhead countershaft or from a motor suspended from the ceiling or resting upon the floor. The power is applied to a belt wheel with a heavy rim for fly wheel effect by single gear reduction, which drives one of the arbors holding the roll sleeve. The gears are machine cut throughout and those of the first reduction are protected by a removable gear case while those on the roll arbors are enclosed within the housing. The operator is further protected by a shield surrounding the working parts of the shear.

The machine can be supplied with a driving mechanism giving a reciprocating motion to the rolls. The pointers are also built without the shear attachment in both rotary and reciprocating types for mounting on a drawing frame between the blocks, in which case they are driven from the gear shaft, as shown in Fig. 2.

## Iron Freight Rates Not to Be Advanced.

Since the publication in *The Iron Age* of April 30 of details regarding the proposed advance in class rates in official classification territory it has been decided by the rate committees of the railroads that an exception will be made of all important articles of iron and steel. Rates will not be advanced on these articles. This change was decided upon at a meeting of the representatives of the various roads held in New York last week. They found the pressure from iron and steel shipping interests was too strong to be ignored, and that the opposition might endanger the general advance in class rates.

Commodity tariffs will be issued by the various roads, in which the rates on iron and steel articles will be maintained on the present basis. It is understood that these commodity tariffs will cover practically all the iron and steel articles that were formerly carried in the "special iron list" of the roads in official classification territory. These tariffs will include all the important jobbing and manufacturing points, so that the rates on iron and steel materials used by manufacturers or handled by jobbing interests will remain unchanged at the present figures.

Rates for short hauls, from the jobber to the retail dealer or the blacksmith, will be subject to the classification and will therefore be advanced, but it is claimed that the increase on these distributing rates will seldom be more than 1 to 2 cents per 100 lb., so that the change will not be felt by the trade or the public. These distributing rates were not affected by the increase of a year ago, when the articles on the "special iron list" were advanced half a class by canceling this special tariff and throwing the articles named in it back into the regular classification.

It is understood that it will require several months for the rate expects of the carriers to readjust all the commodity tariffs to the new basis contemplated. The tariffs to be reissued will be those on commodities which have not been advanced in recent years. It is stated by well informed railroad officials that there will be no general readjustment of soft coal rates until the end of the current "coal year," April 1 next. B. L. A.

# Shop Methods on the Two Coasts.*

## Owners Fare Better on the Atlantic Seaboard and Workmen in the Far West.

BY GEORGE W. DICKIE.

After spending 35 years in the practice of engineering on the Pacific Coast, I am now spending a year and a half superintending work of a similar character on the Atlantic Coast, and I find myself among new conditions and new methods. In this paper I will endeavor to compare, from an engineering standpoint, conditions as I find them there with those that obtain on the Pacific Coast.

The Atlantic States, which front on the long Eastern seaboard, have been five times as long under development as the Western States. Their population is much more numerous within a similar area. The markets for the products of their industries, both domestic and foreign, are correspondingly more extended and varied; their transportation facilities much more highly developed and convenient. Their great population supplies them with workmen, makes necessary the enterprises which demand the product of their engineering establishments, and their facilities for transportation put them in close touch with their markets. While the volume of business is so great, this is not so much because of new demands for new machines to obtain new results, but rather for the same machines to do the same thing in a new locality or to increase the output in the same locality. Consequently, we find mechanical engineering establishments devoted entirely to the production of one machine or class of machines, where every part has been standardized, special machines have been installed for the cheapest possible production of every part and special workmen have been trained to get the largest output possible from these special machines. This condition is possible only where there is a large market for a special type of machine.

### Contrasts in Specializing.

On the Pacific Coast the conditions which would make such a system possible have not hitherto prevailed. Its manufacturing cannot be applied to the production of special machines, for the conditions which demand such a manufactory do not exist. The machines made there are not manufactured, but built one by one. Because of the variety of output which an engineering establishment must produce in order to live, special machines to produce any one part are out of the question, and workmen good at only one operation cannot be profitably employed. The Pacific Coast establishment is, therefore, an engineering shop and not a manufactory, and in it anything possible in mechanics can be designed and built with a very fair prospect of meeting all the requirements demanded of it, but all the engineering skill used in the design and construction of this one machine goes with it, although it is quite as great as that required in a manufactory for the production of a thousand such machines. Consequently the Western engineer must be constantly exercising his skill, experience and ingenuity in the design of new machines to keep his shop going, while his Eastern brother, having perfected a design to meet the general requirements of "the trade," may set his brain to work on eliminating all sources of loss in the system he has established for producing his machine at the lowest possible cost.

The principal difference, then, is this: That whereas the engineer in the West devotes his time and skill to meet the requirements of each customer, the engineer of the East perfects one machine to meet the requirements of all his customers and spends his time and energies in producing it at a cost that will insure it a ready sale in the open market. This difference results in the manufacturing mechanical engineer of the East being able not only to undersell his brother of the West in machines that the general market requires in manufacturable quantities, but in many cases to enter successfully the markets of Europe, where the unit price of labor is much less than that obtaining in his own establishment.

On the other hand, should a client approach an Eastern shop with the outline of some piece of mechanism to meet some new condition, the development of which requires thorough and general mechanical skill, and, after the plan is developed, individual skill on the part of the workman in the shop, to produce it, he will find great difficulty in getting a shop to undertake to carry out his ideas, and should he find one willing to serve him he would probably be surprised at the excessive cost of the undertaking. On the Pacific Coast this original class of work is continually being made and the engineer and his shop are by constant practice ever ready to take hold of and carry to successful completion anything possible in mechanics, and that at a cost not much if any greater than ordinary work of the same complexity.

### Differences in Shop Organization.

The reason for this is to be found in the difference in shop organization brought about by the variance in the trade conditions between the one locality and the other. In the East a thoroughly organized and often very complex system, working harmoniously along lines that are the result of careful study and much experience, produces a machine as perfect as the system of which it is the embodiment, irrespective of the mechanical ability and general knowledge of the operators. The workmen acquire highly specialized skill, carrying out instructions according to the system; the staff becomes highly expert in applying and perfecting it. The system itself is or may be made perfect in obtaining the result for which it is intended. Applied to a new condition it loses its efficiency in a greater or less degree, according to the amount of the deviation from the beaten track. In the West, on the contrary, owing to the necessity of turning out a product as varied as the mechanical needs of a new and developing country, a shop cannot have any particular system, except that of a general organization which must be elastic enough to adapt itself readily to widely different kinds of product, where no foresight can possibly prepare for the work that must next be undertaken.

The planning may be and often is along original lines, without precedent or general experience to guide the designer, and when the design reaches the shop where it is to be made, its growth must be carefully watched, for often the thing in metal does not look like its image in ink. The working mechanic may often be able to save the reputation of the designer by timely advice, the result of his practical experience with metals and his skill in working them. Hence, not only must the designing staff be able to design any kind of a machine that a customer may require, but his workers must also be mechanics of great skill and general experience to bring safely into working form the design that has just been brought from the fertile brain of his chief.

In the one case a perfect system produces at the least possible cost a perfectly planned and experimentally adjusted design without any skill on the part of the workman other than that required to perform his part in the system. In the other case a machine to meet special conditions is designed as skilfully and as perfectly as the engineer's skill and experience enable him to design it; it is built by skilled mechanics under a system that enables the designer of the skilled workman to modify the design at any stage of the production should occasion require it.

### Comparative Results to Owners and Workmen.

There are two principal points of view from which to observe the results that follow from the workings of these two radically different methods of production. They may be viewed from the position of the capitalist and from the position of the working man or operative, both of whom are involved. A shop with the system so much to be seen in the Atlantic States, looked at from the capitalist's position, is a profitable investment for his surplus or inheritance, and tends to create an upper class or controlling power in mechanical engineering.

Looking at it from the operative's position we see the extinction of all individual effort on the part of the me-

* A paper read before the Technical Society of the Pacific Coast, San Francisco, Cal.

chanic to improve the product of which his work forms a part; lack of interest in his work, due to the repetition of the same operation on the same parts of a machine that he never sees finished; no prospect of a better condition or increased pay. Above the workman we see an array of college graduates operating the system and assigning the work to the operatives; above these the controlling head, whose engineering skill contrived the system and the machinery through which it operates, the man who has the confidence of the capitalist and whose position is established as long as the supply of skill to operate the system is plentiful, and this is secured by the yearly turnout of the technical and other colleges.

The shop organization on the Pacific Coast from the capitalist's position is not so good. It shows no prospect of a large return to the investor, owing to the varied character of the product, each item of it involving new problems, which, when solved, have no application to those succeeding them. The controlling head of the work has not the same security in his place as his Eastern prototype, for every day brings a fresh problem, requiring new applications of mechanical engineering skill. His power to work out these new problems is his worth, in virtue of which he retains his position and its emoluments. The problem he solved yesterday is not in itself a solution of the problem of the future; he cannot sustain himself on the success of the past. When the continual strain has told on his store of brain energy and he begins to blunder, he can no longer hold his post and is replaced by a younger and fresher man. He has not an automatic system to fall back on; he himself is the system.

From the working mechanic's standpoint the Western methods of shop organization present a brighter prospect. The better paid positions must be filled by men who know the things they order made and who have learned in the school of experience. Those whom they work under must necessarily have traveled by the same way in which the mechanic now is. To his ambition the view is promising; his brains and mechanical skill are assets of great possible value; he feels that by perseverance he may better his condition and obtain the better fortune to which he aspires. It is, then, from the viewpoint of the man who is willing to think and work, to the progressive man, that the Western method appeals to us.

The economic effect of the system from the standpoint of cheap construction is undoubtedly good, for it reduces the cost of the machine to the lowest possible point obtainable with the current rates for material and labor, and thus enables the producer to reach markets that would otherwise be closed to him. It enables him to secure capital to extend his operations, because he can figure on the actual cost of production and the profits that can be secured. It is his system which enables him to eliminate the uncertainties of skilled labor and the difficulty of knowing how it will act. Much of the work that under the simple organization of the West is done by the works manager is done by a skilled force of computers, whom the system supplies with a great deal of more or less exact data, enabling them to figure just what each man may be expected to do.

### The Slide Rule System and the Man.

In his very interesting and elaborate presidential address on "The Art of Cutting Metals," read before the American Society of Mechanical Engineers, F. W. Taylor gives a very complete history of the system that he has largely been the means of introducing, whereby the possible amount of work of any tool on any known character of material is computed on a special slide rule by a man trained and experienced in this work. This address, which amounts in its scope to a treatise, is undoubtedly of a high order of merit, and is the most valuable contribution to engineering literature that has been made of late years; but in some particulars I wish to take exception to the methods advocated by its author. The result as obtained by the slide rule is the work demanded of the operative. Mr. Taylor informs us that his greatest difficulties have been with skilled mechanics, men whose characters and abilities he had to respect, but who would not give up their habit of thinking for themselves. They refused to accept the decisions of the slide rule and had to give way to the man who was content to carry out instructions. As I thought of the result of this—and, like the men who had to be replaced, I could not help thinking—another way occurred to me whereby the same result was obtained without dismissing the thinking workmen. While studying the system in operation at some large establishments in England, wherein the workmen as a body contract to do all the labor involved in the production of any given piece of work, I happened to be looking through one which had for a long time practiced this method. Observing an old machinist, with an interesting face, at a large lathe, I talked with him about this system and asked him whether it stimulated the men themselves to think of the cost and the quickest way of doing their work. In replying, he pointed to a young man working a smaller lathe nearby, and said: "Now, there is a young man who came here from Glasgow some weeks ago; he is a good lathe hand, he knows everything that can be done with a lathe and does it well; we had to teach him only one thing, and that was how much a lathe can do." This method arrives at the same result as Mr. Taylor's slide rule in obtaining the maximum output from each machine, and its moral effect is good. The moral effect of the system that has enabled the American manufacturing engineer to secure and hold markets, not only in his own country, but also in foreign countries where the workman does not secure anything like the wages paid to the American mechanic, cannot be called good.

I have tried to observe the condition of the workman under the slide rule system as compared with the condition of those who work in shops where the varied nature of the work does not admit of a system that may be rigorously carried out, but where the results obtained, both mechanical and economical, depend largely on the individual mechanical ability and moral character of the working man. The tendency of the rule system is to deaden all individual effort on the part of the working man. His interest in his work ends with the accomplishment of the task worked out for him on the rule. His outlook is not brightened much, even if he succeeds in beating it, as this feat means only a few cents more in a given time. He receives no stimulus from the completion of any finished piece of mechanism that he has produced. He only sees gathering around him on the one side a pile of rough blanks all alike, which he, or rather the machine he operates, converts into another pile of finished parts all alike. That is all he sees and knows of the part he plays in a great industry. There is no nourishment in that work for the brain, and that man cannot grow. In fact, he loses the power to think and the desire to grow; he swiftly and surely becomes the automaton that fits so well into Mr. Taylor's slide rule system. Therefore, I say, the moral effect is not good. But how else is it possible to reach the market with a product that may be profitably sold at the price the market offers? The mechanical engineering establishments in the Eastern States have developed and perfected systems along these lines which are successful in making profits for the investors, but have an immoral tendency to destroy the independent, thinking mechanic.

### Needed Changes in Pacific Coast Methods.

The time is fast approaching, if it has not already come, when the Pacific Coast engineering establishment must take special lines of work and perfect a system of manufacture that will at least secure for it the local market for its product; when that is secured, its growth will be commensurate with the growth of the population and commerce of the place. Is it possible to secure the economy of what I will call the slide rule system by some other method that will not displace the skilled mechanic? Is there, on the other hand, any system of management that will enable engineering establishments on the Pacific Coast to continue doing business under the conditions that now obtain, where time wages are higher than in any other part of the world, and where to offset this the economic conditions of operating are low as compared with any system that determines the amount

of production per unit of time? After careful study of conditions in the West, I am forced to the conclusion that unless a radical change is made in the method of doing work, mechanical engineering as a business will sink to the level of the small jobbing shop. These conditions, bad as they have been, are steadily growing worse. The workmen seem to forget that with modern means of transportation no section of this country, great as it is, can maintain conditions so radically different from those prevailing in other parts, as now attempted by them. The terrible condition of industrial engineering in this part of the country, where we were always proud of our high class workmen, is directly due to the forced and artificial value placed on labor by labor itself. It is hardly possible now to go back to old conditions of hours and wages. If we are to continue to produce what we require of machinery, those managing the establishments that are to produce it will have to find out honestly what part of the possible selling price can be given to the workmen who convert the raw material into the salable machine, and contract with them or their representatives to do all the work for that amount; in that case the men can work long or short hours, as it may suit them. Each man will be compelled by his fellows, who are his partners in the contract, to do his fair share of the work in order to obtain his pro rata of the reward.

I do not think that the methods I find so extensively adopted in the East can be put in operation on the Pacific Coast unless the present force of mechanics now usually on strike is entirely eliminated and a new race of operatives, willing to work under the slide rule system, is introduced. Either the slide rule system and a fresh supply of labor or the contract system and the present force must step in to save this struggling and now almost expiring industry.

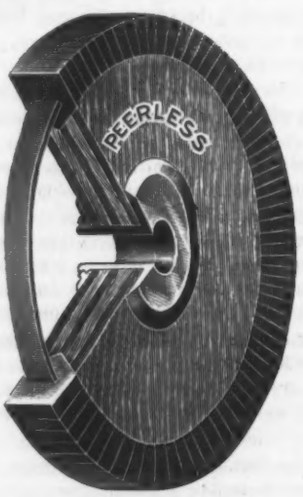
### Much Higher Costs on the Pacific Coast.

A few months ago I had occasion to purchase a number of machines of a type that I had perfected on the Pacific Coast to meet the special requirements there. The demand on the Coast required about 20 of these machines each year, and I used to make them in lots of 20 at a time, not so much for profit as for filling in and keeping the small tools in work. They were sold at $900 each, and at that price they paid for material, labor and a pro rata of general expenses. I required 16 of these same machines for the purpose I refer to and had the drawings from which they were made in San Francisco. The same machines I bought for $500 a piece at an establishment in Maine, where the facilities in tools and handling apparatus are not so good as in San Francisco. About 60 of these machines are now being made at the same establishment for the Pacific Coast trade, and the business of making them there is stopped. The labor cost of this machine in San Francisco was $530, while the labor cost in the East is $210. Adding the cost of transportation to this Eastern labor cost, and the amount available for wages to operatives in San Francisco, assuming, of course, that the general expense and profit amounted to the same thing in these two cases is $315. Since interstate commerce is free and unrestricted, the transportation charges represent the difference available in the possible prices obtainable in the East and the West for such a machine as a continuous manufacturing proposition.

To so alter your conditions in the labor market that you may compete with the Eastern States is a present necessity if you would secure in mechanical engineering future prosperity. A change must come in the relations of employers and employed; a more intimate connection and co-relation must be established. To make the mechanic understand that there are practical and economically impassable limitations to the achievement of short hours and high wages; to make him realize that the price of any article being fixed, the amount available for labor is also fixed; to bring the employers to believe that the only way to prevent strikes and secure a lasting industrial peace is to have a thorough understanding between themselves and their employees as to the amount in the cost of any product that may be applied to compensate the workman for his toil; to teach employers the justice of frankly figuring out with their employees the cost of materials, expense of operating, profit required and amount available for labor; in short, to establish a just balance and to apply the Golden Rule to industry—this is the great problem to be solved by those interested in the development of engineering industries on the Pacific Coast. Strikes and lockouts will never settle anything in industrial economics. Their object is to destroy, and in this their success is beyond dispute. As a means of settlement for any misunderstanding that may exist between employer and employed they should at once and forever be done away with, as entirely too crude for this age of enlightenment and progress.

## The Peerless Polishing Wheel.

The polishing wheel, a sectional view of which is shown in the illustration, is designed for medium and heavy work, such as edge tools, tool handles, carriage hardware, stove trimmings, &c. The center is of wood with iron core and flanges, and the rim or cushion consists of pieces of leather set edgewise on the periphery of the wood. The pieces are strung together on a metallic band and glued to each other and to the wooden center. The thickness of the cushion gives elasticity to the wheel. It can be turned to fit any work desired, and




Sectioned View of the Peerless Polishing Wheel Made by F. P. Pfleghar & Son, New Haven, Conn.

will not blister when used on heavy work. The best material is used in its manufacture, it is stated, and great durability is claimed for it. It is manufactured by F. P. Pfleghar & Son, New Haven, Conn.

**A Western Molding Sand Plant.**—The Illinois Valley Sand Company, Ottawa, Ill., has recently completed a plant for the preparation of molding sand. This plant, which was designed and constructed by the J. C. Buckbee Company, engineer, Chicago, has a capacity of about 1000 tons daily, and is the only one of its kind in that section of the country. A feature of the plant is its large storage capacity, which enables heavy stocks to be carried, from which quick shipments can be made at any time. It is also equipped with a system of driers so that dry sand can be furnished regardless of weather conditions. This is of great importance in the winter, since sand as it is taken from the bank, or green, as it is termed, will in cold weather freeze in the cars, making it extremely difficult to unload at its destination. The sand handled by the company contains 98 per cent. of silica, mixed with about 1 per cent. of clay, which makes it not only a desirable steel foundry molding sand, but equally serviceable for core work. All of the sand in passing through the plant is thoroughly screened, thus yielding a uniform product either in dry or green sand. A large part of the product is used by the American Steel Foundries for the requirements of its Western plants.

# Core Binders.*

BY E. D. FROHMAN.

The ideal core compound is one that makes a good plastic core when green; strong, open, tough when dried, which will not swell when baked, but will fit right into the core box, nor will it break off from the rough usage and handling in the foundry, and when the iron is poured should break up and literally run from the mold and under no conditions will absorb moisture. Truly this is an ideal state, but it has not yet been reached, even if the average foundry supply salesmen think they have it. To accomplish this has been the aim, ambition and desire of every manufacturer. It is true that these conditions can be brought about where the question of cost does not enter, but in this every day world of commercialism, where cost is an ever important item of consideration, our ideal must be within the limits of reason and at a cost within reach of every foundryman. So much for ideal. Now let us take the individual raw materials which are used in the manufacture of cores in every day use in the foundry.

### Flour and Resin.

No one will deny that more flour is used in the making of cores than any other single class of raw material. We will leave out the item of adulteration of flour, which is known to every foundryman to his great disadvantage and cost. It is only the pure, high grade flours that we will discuss, which are now high in cost and vary from day to day. Now let us study flour; first its action when green, when baked and when shaken from the mold. In the first place, when plenty of flour is used in making the core we have an excellent green sand core; but one of the greatest disadvantages where a large quantity of flour is used is the swelling when the core is baked, not to say anything of the serious objections of the castings being lost by blowing and their cleaning cost.

To blame the flour, when used in excess, because of blowing would not be fair, as blowing with any compound can be brought about by the strong arm of the coremaker. Should the coremaker ram the core too hard in spots, it is very apt to cause blowing. It may sound strange, but very often cleaning costs are advanced on account of the use of flour, the core not cleaning out as readily as one would suppose. Another of the great disadvantages of flour is its fluctuation in the market. The foundryman, figuring his coreroom cost one day at one price, to be true to himself must look at the daily flour market quotations and find where he stands, especially if he is a large user, and some of you use at least a carload a month.

Resin, formerly a residue in the manufacture of turpentine, now a by-product in the manufacture of turpentine from yellow pine, is undoubtedly one of the best materials for making cores, and approaches nearer to the formula given as an ideal core compound than any other on the market. The only objections I have been able to find are the smoke and baking, and the fact that the Standard Oil people need the money and have manipulated its selling price. This makes it a rarity for foundry use and places it on a pedestal of "what might have been." Resin surely makes a solid core when dry, and the addition of loam sand makes a good green core sand when dry, and it does certainly clean readily from the castings when the iron is poured, but the four letters, c-o-s-t, are rapidly eliminating resin for foundry purposes.

### Dextrine and Patented Mixtures.

Dextrine makes a green, plastic core, and if used in proper proportions is all that can be desired. Again the item of cost comes into play, from the fact that pure dextrine is out of proportion in its cost for the use that it may be put to. When it is sold cheaply so that the foundry can use it, it is either in the form of adulteration or what is called floor dust, and contains various proportions of starch, dirt and what not, making it an expensive core compound. It must be watched exceedingly closely not to have too much of the dextrine, as absorbing moisture and blowing can only be avoided by having the right proportions to the sand in question; but if used properly it will clean out readily from casting and is of great value. The users of dextrine must watch their sand more closely than any other mixture that can be used.

Then we have patent mixtures consisting of treated flour or starch or a celluloid compound, so-called jellulose. This is simply flour treated with caustic soda or chemicals to convert the starch in the flour to dextrine, thus giving a greater green sand binding and the chemicals giving the sand great strength when baked. The cleaning cost is the only item that must be watched in a case of this kind, the chemicals burning in and preventing the sand from breaking from the mold.

### Bitumen, Glue, Oils and Glutrine.

Bitumen, or asphalt, is absolutely no good when used by itself, as the bitumen bakes hard in the oven and when the heat of the iron strikes it the core does not break up as one would suppose, but becomes harder than ever. Many a time the writer has seen the cleaning floor worked for hours to clean out a core made with this class of material.

Glue itself may sound strange to the ordinary foundry. When dissolved in water and boiled and used in the proper proportions it makes a very good core. Absorbing the moisture, however, and blowing when the castings are poured offer two serious objections, and it must be watched exceedingly closely in order to give any good results whatsoever.

Now come the various oils. There is no question that linseed oil makes an exceptionally fine core and it is one of the best core compounds, but that ever used four-lettered word, cost, which must be heeded in the ordinary foundry practice of to-day, prevents its use. Linseed oil makes an exceedingly strong core when dry, but a very poor green sand core, and forms must be used with this as well as oil cores when baked. Another oil used to a great extent in the foundries in the East is fish oil. Its ill smelling properties make it obnoxious for many foundries to use, but it has excellent qualities and in many ways is equal to linseed. Corn oil is also an exceptionally good oil, having, however, its faults of not being quite as strong as fish oil and linseed oil and it will not spread over the sand like linseed oil. Therefore core oil manufacturers use small proportions of the various oils such as linseed oil for strength and corn oil and petroleum or mineral oils for spreading the oils over the various sands. It can be readily seen that by using different proportions of the various oils mentioned above, by figuring permutations and combinations, almost 100 mixtures of different kinds of oils can be placed upon the market, all having merits. Glutrine is a residue of paper mills. In the manufacture of paper the wood is treated with sulphite and magnesia sulphite in large digesters. The lime and magnesia sulphite eat out the resins from the wood and leave the jellulose, which is called the wood pulp. The liquors contain the resins of the wood which give the green sand binders, while the lime and magnesia give bond when the materials are baked. The sulphur in the compound is apt to affect the iron of the casting.

### Esso and Kantbebeat.

Esso core binder is the juice of various plants treated with chemicals which will not absorb moisture. The juices of the plants give the green sand binder and the chemicals bind the core when baked. The extreme heat of the iron breaks up these chemicals and causes the core to clean readily from the sand. There are many advantages in this material. One is its cheapness and another is the readiness with which it can be used. It goes as far as 60 parts of sand to one of core binder, and the writer does know of the use of 100 parts of sand to one of core binder. Esso core binder, on this account, the writer considers one of the most modern and up to date core binders, and naturally would do so as it is a child of his own.

No doubt many other materials can be used in the

* Read before the Pittsburgh Foundrymen's Association, May 4. Mr. Frohman is Pittsburgh representative of the S. Obermayer Company.

manufacture of core compounds, but are excluded on account of cost. Now let us take the bitumen compounds, of which Kantbebeat is one manufactured by the writer's company. This contains one of the ideal materials spoken of before, as the highest quality of material for giving it a good green sand body; the bitumen giving it the bond or body when baked and having materials added to it which will burn up readily when the iron is cored. Permutations and combinations were tried in the laboratory of the company to the extent of over 200 different kinds of dry compounds until we found what was desirable. This material had to be manufactured so that it could be shipped large distances, so that it could be kept in stock from three to six months, and even a year, and not spoil; it had to be made so that it would be acceptable to almost all sorts of conditions of sand.

Kantbebeat core compound for heavy work is used with 10 parts old core sand, 10 parts loam molding sand, 10 parts sharp sand. The temperature for the mixture is about the same as for flour cores. The point aimed at is a core that must be well heated in order to have it cleaned easily and readily from the casting. If the heat is not of a high temperature the cores are apt to bake extremely hard. We have found that Kantbebeat is of extreme value to foundrymen in green sand work, when used at the ratio of 15 parts of molding sand to 1 part of Kantbebeat. It has the great advantage of not swelling or warping, and doing away with the sea coal facing generally used in the sand and also for skin dried work. This is especially of advantage where charcoal fires must be used for skin drying, and in this community, where gas is becoming a luxury, it would be of great assistance and value to the foundryman.

## The Duty on Metal Statuary.

With a view to reducing the duty on metal statuary, a test case has been brought before the Board of United States General Appraisers, which it is intended shall reach eventually the Supreme Court. The statuary in question has been cast, but afterward finished or improved by the hand of the designer or sculptor. In brief, the question between the importers, B. Altman & Co., New York, and the Government, is whether the statuary in controversy is the "statuary" referred to in the Tariff act or whether the articles are to be regarded for the purposes of levying duty as "manufactures of metal." Section 3 of the tariff provides for the making of commercial agreements with foreign countries under which certain articles shall be permitted to be imported here at a reduced rate of duty. Among these articles is statuary, on which the duty is to be reduced from 25 to 15 per cent. The term "statuary," as used in Section 3 and in the commercial agreement with France and in the President's proclamation thereunder, is not accompanied by the qualifying phrase about being cut by hand from metal. The courts have recently decided that an article is cut by hand from metal, even though cast, if the finishing touches are made by hand under the personal supervision of the sculptor.

### Bronze Bust from France.

The case now before the Board of General Appraisers relates to an importation of bronze busts from France. The importers brought testimony before the Board of Appraisers that such works were finished under the personal supervision of the sculptor and required finishing touches by hand. The Government is undertaking to show that all a sculptor has to do with bronze statues, even of the highest class, such as equestrian statues and statues in heroic size by distinguished sculptors, such as J. Q. A. Ward, MacMonnies, Ruckstuhl, St. Gaudens, and others, is to prepare a design and a plaster model, and that after they have done this it is exceedingly unusual for them to give any supervision whatever to the completion of the work, and that in some instances they never see it after it is finished or before its erection. The peculiarity of this situation consists in the fact that to prove these allegations the Government does not call these distinguished sculptors, or any of them, or any sculptors, but brings as witnesses foremen or superintendents from foundries where such works are constructed, and these men testify that the sculptor in general has nothing to do with the completion of a statue.

It is well known that when the sculptors are engaged to design these statues, their employment and their compensation are based largely upon their contention that in addition to preparing a design and a model they have to give personal supervision to the work of preparing the statue, so that if the testimony of these brass founders is to be accepted it apparently puts the sculptors in the position of having their scale of compensation determined and based upon an assumed amount of labor on their part, which they never in fact performed.

### Antique Statues in Evidence.

The Board of Appraisers gave a hearing in this case May 8, at which in order to prove that there were in fact statues wrought by hand from metal, the Government offered in evidence copies of statutes produced by *repoussé* work, said to have been executed in the year 500 B. C. Counsel for the importers objected to these photographs upon the ground that proof that certain works of art were produced in a certain way 500 years before Christ did not tend to establish that they were produced in that way nearly 2000 years after Christ, but the testimony was admitted. W. Wickham Smith of the firm of Curie, Smith & Maxwell, who is acting as counsel for the importers, had this to say:

> The question at issue in this case is one of very general importance, because all large importers of bronze statuary are interested in the decision. The Supreme Court has never yet passed upon the question whether the terms "wrought by hand from metal" are to apply only to works that are not cast, but are entirely produced by hand. If the Government's contention on that point be correct, then practically no metal statuary would be covered by paragraph 454, as it is only in the case of one or two importations in a decade that statuary wrought by hand from metal has been brought into this country. The only well established instance of this kind that I know is that of the Bartholdi Staute of Liberty in New York Harbor. Of course, this statue was not charged with duty, as it was a present to the United States. In the case of almost all metal statuary imported into this country, it is cast, and the only hand work upon it consists of finishing touches, after the statue has been substantially completed by the brass founder. The importers are determined to procure a decision of the court of last resort upon this question.
>
> In the present case an appeal will doubtless be taken by either side from a decision of the Board of General Appraisers to the Circuit Court of the United States. If the decision of that court should be unfavorable to the importers the case will be taken directly to the Supreme Court of the United States by reason of the fact that a question is involved as to the consruction of a treaty.

The board is expected to make a decision in the matter shortly.

**Allis-Chalmers Power Equipment for the Youngstown Sheet & Tube Company.**—The Youngstown Sheet & Tube Company, Youngstown, Ohio, has placed a contract with the Allis-Chalmers Company, Milwaukee, Wis., for three large motor generator sets intended for operation in connection with two 1500-kw. Allis-Chalmers steam turbines and generators ordered some time ago. The equipment will also include two induction motor exciter sets, a balancer and transformers of the oil filled self-cooled type. The main motor generator sets each comprise 500-kw. 250-volt direct current generators and 750-h.p., 6000-volt, 25-cycle motors. This addition will give the plant electric current for lights, crane operation, furnace skip, &c. The added power, to provide which practically a new power house was required, was rendered necessary by the erection of two new blast furnaces. One of the turbines is designed to operate condensing and one noncondensing, with steam pressure of 150 lb. per square inch. The exhaust from the noncondensing turbine is to be utilized for heating boiler feed water in an open type heater. Julian Kennedy, Pittsburgh, Pa., acted as consulting engineer.

The corporate name of the United States Standard Electrical Works, Racine, Wis., has been changed to the Standard Electric Works.

## The Rockwood Dry Pipe Valve.

The dry pipe valve shown in the illustrations constitutes the essential feature of a dry pipe automatic sprinkler system for the fire protection of buildings, where water in the pipes would freeze were it admitted. Air is maintained under pressure in the system, acting against the water pressure on the under surface of the valve. When the air pressure acting on the surface of the prim-

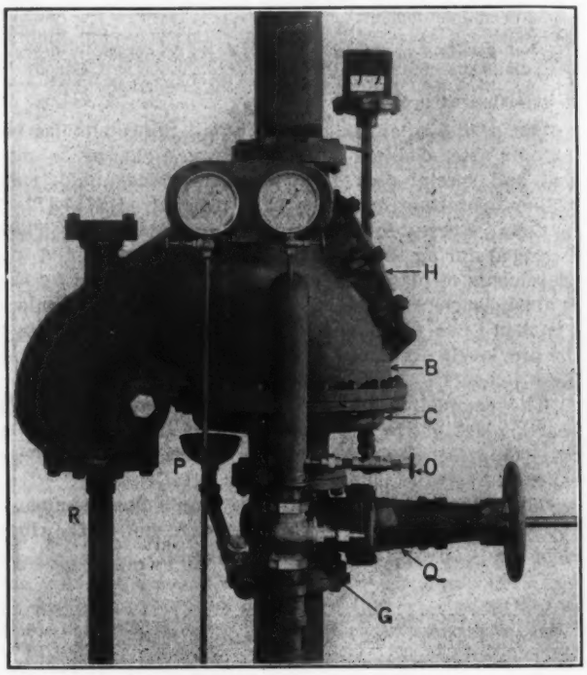



Fig. 1.—The Rockwood Dry-Pipe Valve for Automatic Sprinkler Systems, Made by the Worcester Fire Extinguisher Company, Worcester, Mass.

ing water is relieved by the opening of a sprinkler, the upward pressure of the water causes the valve plate to lift, and an intermediate chamber fills with water, with the result that the entire force of the water, exerted over the full area of the plate, pushes it over to the wide open position and thus leaves a straight unobstructed passage for the water to the system. The valve is the invention

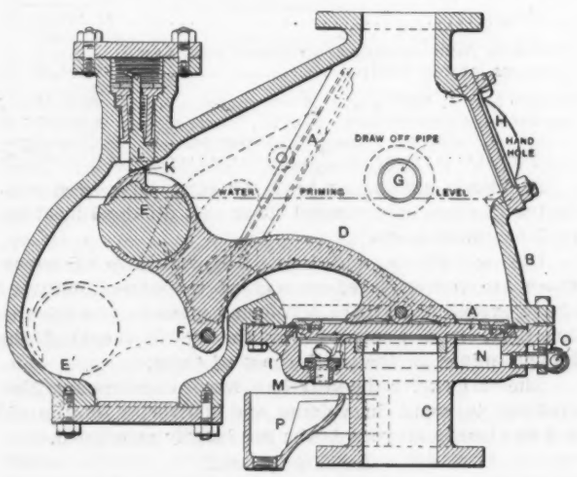



Fig. 2.—Sectional View of the Rockwood Dry-Pipe Valve.

of George I. Rockwood, and is built by the Worcester Fire Extinguisher Company, Worcester, Mass.

In the exterior view of the valve, Fig. 1, and the sectional view, Fig. 2, the same reference letters designate the same parts. The bronze valve plate A acts both to close the water inlet J, and to seal the air valve chamber by the contact of the rubber ring at its circumference on a block tin air valve seat, I. The valve plate swings in the upper part of the valve body, B. The lower part, C, of the valve body carries the air and water seats. The valve plate and a counterweight, E, are attached to the swinging arm, D, the whole swinging about the axis F as the valve opens to the position A' E' F. The counterweight is an iron ball filled with lead. When the valve is shut, the center of gravity is such as to hold the plate on its seat, but when the valve opens the center of gravity shifts to hold it in that position.

The ratio of the upper surface of the valve against which the air pressure acts and the under surface which receives the water pressure is such that with 50 lb. water pressure the limits of air pressure in the system are 15 and 25 lb.; at 75 lb. water pressure, 20 and 30 lb.; at 100 lb. water pressure, 25 and 35 lb., and at 150 lb. water pressure, 35 and 50 lb. air pressure.

As a means of precaution the projection K on the counterweight ball is adapted to engage a spring latch L. when the valve opens. Its purpose is to prevent the valve plate returning to its seat if the combination should occur of a feeble water supply, a corroded or jammed spindle F, and a reversal of flow after the riser has filled with water. Under normal conditions the latch has no part in the operation of the valve.

The ball seated swing check valve M is automatically held from its seat by the contact of its arm extension with the under side of the valve plate, and thus allows any water which may leak by J to run freely out of the intermediate chamber N, into the drip cup, P.

A jack, shown at R, is used for raising the lip of the upper body B over the flange of the under body C, when it is desired to remove the under body or the valve plate for repairs. A drain valve for emptying the entire system of sprinklers and piping is shown at G, and at O is a drip pipe for drawing the priming water left in the valve body after the system has been emptied. The valve has been approved by the Underwriters' Laboratories.

## The American Welding Company.

The American Welding Company, a Pennsylvania corporation, with a capital of $100,000, which recently succeeded to the business of the Morton Iron Works, Greenpoint, Brooklyn, N. Y., has just completed the erection of a large plant at Carbondale, Pa. It comprises a machine welding shop 82 ft. wide, two stories, with central crane way of 200 ft. for an overhead traveling crane of 40 ft. span; a hand welding shop 38 x 123 ft., one story; a storage warehouse 22 x 41 ft., two stories; an office building, 43 x 27 ft., one story, with vault extension, 10 x 16 ft., and basement; a power house, 36 x 39 ft.; a fuel gas generating house 25 x 25 ft., and a gas holder in iron tank. The principal buildings are constructed of steel, brick and glass, and are practically fireproof.

The works occupy a site of four acres, located on the Delaware & Hudson Railroad in North Carbondale; it also has track connections with the Erie and the New York, Ontario & Western railroads, so that the shipping facilities are of the best. The plant is fully provided with overhead traveling cranes, air and hand hoists, an industrial railroad equipment, is lighted by electricity, and has a complete system of fire protection. The machinery is operated by electric and hydraulic power and all of it has been specially built for the particular work in view. A 200 hp. Wickes vertical boiler supplies the steam for power and heat.

The works are specially designed for the manufacture of welded steel tanks for ammonia, carbonic acid, chlorine and other gases under high pressures; shells, furnaces, steam drums, mud drums and headers for steam boilers; ice machine and refrigerating machine shells and tanks, paper pulp digesters, wood vulcanizing cylinders, chemical treatment cylinders, water pipe of large diameter and length, with welded on flanges and other work in which the use of riveted seams is either undesirable or impracticable.

The officers of the company are Chas. L. Rowland, president; Alfred P. Trautwein, vice-president; Frank A. Dempsey, secretary and treasurer. The company reports considerable work on hand and numerous inquiries that promise well for future business.

## The Pennsylvania Steel Company.

The following report covers the operations of the mining, manufacturing and railroad companies owned or controlled by the Pennsylvania Steel Company of New Jersey for the fiscal year ending December 31, 1907:

### Mining Companies.

The coal properties in Indiana County, Pa., belonging to subsidiary companies, the Penn-Mary Coal Company and the Possum Glory Coal & Coke Company, produced 428,000 tons of coal compared with 259,000 tons in 1906. These properties were further developed during the year by the opening of a new mine and the construction of a steel coal tipple.

The iron ore properties near Santiago, Cuba, belonging to subsidiary company, the Spanish-American Iron Company, which have been producing for many years, were operated to their full capacity during 1907. They mined 500,000 tons of iron ore during the year, and by explorations added more than this amount to their reserves. In last year's report, reference was made to the discovery on the north coast of Cuba by the company of large deposits of iron ore, the development of one of which near Mayari was then under consideration. This new deposit is of vast extent, and will supply all the needs of your manufacturing companies for many years to come. Its development was begun in June, 1907, and is being pushed as rapidly as circumstances will permit. It is hoped to have the development completed and the property ready to ship ore by the middle of 1909. To obtain the funds required for this development, the Spanish-American Iron Company has authorized the creation of a mortgage on the Mayari ore properties, railways and terminals, securing $5,000,000 20-year Sinking Fund Gold Bonds. These bonds are guaranteed as to principal, interest and sinking fund by your company, and $2,500,000 of them have been sold.

### Manufacturing Companies.

These are the Pennsylvania Steel Company of Pennsylvania, with works at Steelton and Lebanon, Pa., and Maryland Steel Company, with work as Sparrow's Point, Md. Their production of pig iron in 1907 was 843,000 tons, compared with 809,000 tons in 1906. Of steel ingots, they made 932,000 tons in 1907, compared with 997,000 tons in 1906.

At the Steelton Works of the Pennsylvania Steel Company, the new open hearth plant, consisting of five 75-ton furnaces, which has been under construction for the last two years, was completed, the first steel having been made in May and the entire plant having been put in operation in August. This new plant has operated very satisfactorily, and has shown a considerable saving in costs over those obtained in the older open hearth plants at Steelton. During the year No. 3 blast furnace of the Steelton plant was remodeled and largely rebuilt. The results obtained from the new furnace have been satisfactory in the direction of both increased output and decreased costs.

A comprehensive plan for improving the methods of mining at the Cornwall Ore Banks, in which subsidiary company, the Pennsylvania Steel Company of Pennsylvania, owns a majority interest, was perfected during the year and the work begun, but owing to the existing financial conditions, further prosecution of this work has been postponed for the present.

At the Maryland Steel Company's plant, at Sparrow's Point, no changes or additions of special note were made during 1907, excepting the completion of the improvements to steam engines in the rolling mills, which had been begun in 1906.

The railroad companies, owned or controlled, were successfully operated during the year.

### Earnings of All Companies.

In the annual report for 1906 the statement was made that a decrease in net profits might be expected in 1907 because of the increased costs of labor, supplies and raw materials. The almost entire suspension of manufacturing operations during the last two months of 1907, brought about by the October panic, has caused a still further reduction in profits.

The combined income accounts of all companies for the year ending December 31, 1907, are as follows:

| | |
|---|---|
| Net earnings from operation | $4,161,319.08 |
| Rents, income from investment and interest | 314,395.28 |
| Income from all sources | $4,475,714.36 |
| Less interest on bonded debt | 827,297.47 |
| Net income | $3,648,416.89 |
| Less charges to general and special depreciation of plants and equipment | 1,267,327.27 |
| Net profits | $2,381,089.62 |
| Less dividends of operating companies | 1,140,000.00 |
| Balance of profits | $1,241,089.62 |

Out of the balance of profits of all the companies remaining after deducting interest charges, charges to general and special depreciation and dividends paid, subsidiary operating companies have transferred $755,472.46 to their reserves for future plant improvements. They expended during 1907, $1,529,876.73 for additions and improvements to plants, exclusive of the sums spent by the Spanish-American Iron Company on its new developments in Cuba. This entire amount was charged against the previously accumulated account for reserves for plant improvements.

The completion of coke oven plant and new open hearth plant of the Steelton Works of the Pennsylvania Steel Company were the principal items on which these expenditures were made.

The balance sheet of the Pennsylvania Steel Company (of New Jersey), and profit and loss account at the close of business on April 30, are as follows:

*Assets.*

| | |
|---|---|
| Cash | $41,145.15 |
| Loans to operating companies | 2,440,810.61 |
| Stocks and bonds | 25,380,516.09 |
| Total | $27,862,471.85 |

*Liabilities.*

| | |
|---|---|
| Capital stock—preferred | $16,500,000.00 |
| Capital stock—common | 10,750,000.00 |
| Profit and loss | 612,471.85 |
| Total | $27,862,471.85 |

*Profit and Loss Account May 1, 1907, to April 30, 1908.*

| | |
|---|---|
| Expenses | $35,499.58 |
| Net earnings | 1,229,877.38 |
| | $1,265,376.96 |
| Dividends, 7 per cent. preferred | $1,155,000.00 |
| Balance | 612,471.85 |
| Total | $1,767,471.85 |
| Dividends from operating companies and miscellaneous interest received | $1,265,376.96 |
| Balance May 1, 1907 | $537,594.47 |
| Net earnings brought down | 1,229,877.38 |
| Total | $1,767,471.85 |

Dividends amounting to 7 per cent. have been paid during the year on preferred stock. No dividend has been paid on common stock.

During 1908, no additions or expenditures of importance are contemplated at any of the plants with the single exception of those now being made by the Spanish American Iron Company for the development of the Mayari mines on the north coast of Cuba.

The outlook for the year 1908 is not encouraging. New business is small in volume and deliveries on the old orders already on your books are largely suspended.

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W. N. Kratzer & Co., Pittsburgh, have secured a contract for the fabrication and erection of a 180 x 184 ft. 6 in. steel building, to contain coal bins, crane runways, &c., for a power house for the Titusville Iron Company, Titusville, Pa., and also an order for the erection of a steel bridge over the Pennsylvania Railroad at Graham street, East End, Pittsburgh. The bridge will cross the railroad by one span 72 ft. long, having passageway 8 ft. wide. The girders are made 5 ft. deep, with solid web. The firm also recently made a shipment of a 51 x 150 ft. steel building to the Ashland Iron & Mining Company, Ashland, Ky., to serve as a new cast house.

## The Philadelphia Foundrymen's Association.

The one hundred and seventy-seventh regular meeting of the Philadelphia Foundrymen's Association, held at the Manufacturers' Club, in that city, on the evening of May 6, was the most largely attended meeting that the association has had for a long time. The attendance evidenced the interest which the foundry trade has displayed in the practical and commercial success which has been attained by the manufacture of cast iron soil pipe in permanent molds, by the Tacony Iron Company, Philadelphia. A paper on this subject was presented by Edgar A. Custer, president of the company. The process was fully described and illustrated in *The Iron Age* of April 16.

Thomas Devlin, president of the association, called the meeting to order at the usual hour. Petitions of the following named firms were presented for membership and favorably acted upon: John Wood Mfg. Company, Conshohocken, Pa., manufacturer of soil pipe and boilers; John H. Clay, 1320 Ridge avenue, Philadelphia, manufacturer of fire department supplies, represented by George B. Clay; and the Debevoise-Anderson Company, iron, coal and coke, New York City, represented by Nils Anderson.

The Short Weight Committee, through its secretary, A. A. Miller, reported that the discussion of the committee had been carefully edited and was now about ready to be printed. It is expected that copies will be ready for limited distribution at an early date.

Secretary Evans presented correspondence asking for the association's co-operation in combating objectionable legislation in Congress, particularly in connection with the anti-injunction bill, now before the Judiciary Committee, and after some discussion the association put itself on record as being opposed to this measure.

An invitation from the American Foundrymen's Association and Foundry Supply Association to attend the annual convention of the former and exhibit of the latter in Toronto, Canada, June 8 to 12, was received, and it is understood that the Philadelphia delegation will be quite a large one.

At the close of the business session, Mr. Custer read his paper on "Casting Soil Pipes in Permanent Molds." Lantern slides were used to illustrate the various stages of the process, and the presentation was on the whole one of the best that has been presented before the association for some time. He was given a unanimous vote of thanks by the association.

## The Western Foundrymen's Association.

At Joplin, Mo., May 2, an enthusiastic meeting of foundrymen was held, at which practically all the foundries in western Missouri, Kansas, Arkansas and Oklahoma were represented. An organization was effected, to be known as the Western Foundrymen's Association, and the following officers were elected for the first year: President, Dr. A. D. Thomas, Thomas-Fordyce Mfg. Company, Little Rock, Ark.; vice-president, J. A. Rogers, Rogers-Conklin Mfg. Company, Joplin, Mo.; secretary and treasurer, H. T. Hornsby, United Iron Works Company, Springfield, Mo.

A prospectus of the new association has been issued, from which the following extracts are taken:

> Its purpose is to take up and discuss at the meetings topics of general interest to the trade looking to the obtaining of better results in foundry practice; the adoption of a form of pig iron contract more advantageous to the foundrymen's interests; greater unity of action in the handling of the labor question; in fine, a full and free interchange of ideas among the members that cannot fail to be productive of the most beneficial results.
>
> In the accomplishment of these ends the support of every foundryman west of the Mississippi River is solicited, assuring each one that he will be accorded the same treatment as his fellow member, as there are no special interests to be served, and every one will stand fairly on the same basis.

The next meeting of the association will be held at Joplin, Mo., June 13, at the new Connor Hotel. Every foundryman interested in the movement is requested to be present. The dues are $5 per year, and no salaries are paid to any of the officers.

## The Machinery and Supply Conventions.

RICHMOND, VA., May 13, 1908.—(*By Telegraph.*)—During the last two days, while machinery and supply dealers and manufacturers from all parts of the country have been gathering here, the Executive Committees of the three associations which are to hold simultaneous and joint meetings here during the balance of the week, met and made final arrangements for the conventions. Reports and resolutions which will prove the framework for the conventions were received and put into shape, so that everything may proceed smoothly and a maximum amount of business may be dispatched when the delegates assemble this morning.

Keen disappointment is expressed over the fact that Secretary of War William H. Taft, who is now in Panama, cannot be here to deliver an address as arranged. James H. Hoard, Collector of Internal Revenue of the Philippines, will speak instead. He will speak on our trade relations abroad and is well equipped to handle his subject, as he has studied foreign trade conditions at close range, especially in the Orient. Another disappointment is occasioned by the absence of C. H. Briggs, president of the Southern Supply and Machinery Dealers' Association, who has been unable to leave his home for some time owing to ill health. J. C. Miller, first vice-president of the Southern Association, will officiate in Mr. Briggs' place.

Secretary F. D. Mitchell of the American Supply and Machinery Manufacturers' Association is in charge of the reception of delegates, and Secretary A. T. Anderson of the National Supply and Machinery Dealers' Association is working hard to make matters as pleasant as possible for everybody. There are indications that at this meeting the members of the association will display a keener interest in legislative matters, and will discuss ways and means of offsetting influences at work in Washington for the enactment of dangerous legislation. These efforts of the supply and machinery men will be directed against the Hepburn or similar anti-injunction matters, and against the adoption of a parcel post branch of the postal service, and efforts will be made to work up sentiment in favor of Federal sanction of trade agreements which are for the good of the industries at large and do not work injustice to the consumer. It is also probable that action will be taken urging manufacturers' names and brands.

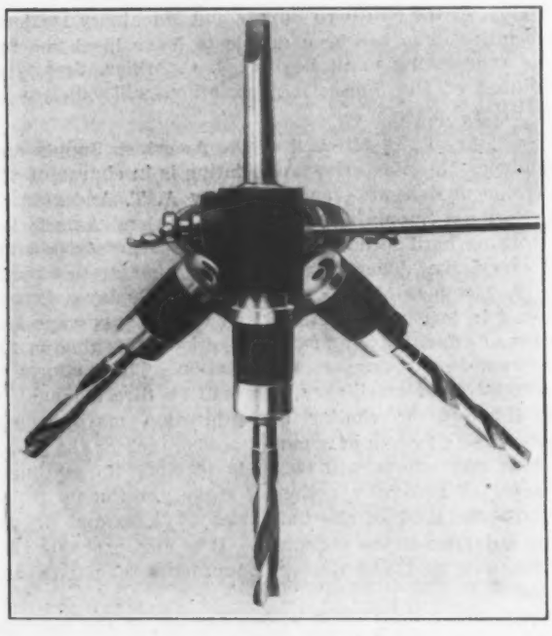
There is a good sized representation of the machine tool trade, and important topics affecting this branch of the work are scheduled for discussion. The three associations will meet in executive sessions this morning, and at 2 p.m. the formal public opening session will be held.

**The Detroit Foundrymen's Association.**—The newly formed Detroit Foundrymen's Association held a meeting April 30, which was devoted mainly to a consideration of the coming convention of the American Foundrymen's Association at Toronto, and a discussion of a proposal to invite the association to hold its convention of 1910 in Detroit. Remarks were made by a number of members and by H. M. Lane, secretary of the Foundry Supply Association. It was decided to extend the invitation, and a delegation will go to the Toronto meeting for that purpose. The ability of Detroit to take care of the large exhibit connected with the A. F. A. convention has been investigated and it has been decided to offer for the use of the convention and exhibit the State Fair grounds, where large buildings have recently been erected. The facilities are reported excellent for the requirements of the foundry exhibits. It is noteworthy that, whereas in former years there was often considerable difficulty in placing the conventions of the American Foundrymen's Association, to-day there is an active competition. Cincinnati has already spoken for the convention of 1909, and Pittsburgh will compete with Detroit for that of the following year. In case the decision is given to Detroit, Pittsburgh will ask for the convention of 1911.

## The Patterson Turret Drilling Attachment.

An attachment by the use of which a single spindle upright drill is in a sense converted into a multiple spindle drill, is shown in the accompanying illustration as offered by the Patterson Tool & Supply Company, Dayton, Ohio. As is apparent from the engraving it does not provide a multiple drill of the kind in which two or more spindles are in simultaneous operation, but any one of the five spindles can be used individually and selectively. It even has an advantage over a multiple drill used to perform successive operations in that it is not necessary to change the position of the work, and yet it also saves time of taking out and replacing drills, taps, reamers or like tools for operation in the same hole. This attachment permits instant substitution, so that several operations can be performed successively and rapidly, without requiring the use of wrenches, drift keys, &c., and there is no need of stopping the drive of the machine while the change is made. The attachment is made in one size only, and will carry drills from ⅛ in. to ⅞ in. in diameter. The sockets are made to fit a No. 2 Morse taper, to receive drills, reamers, &c.

This turret attachment can also be used to advantage



The Five-Spindle Turret Drilling Attachment Sold by the Patterson Tool & Supply Company, Dayton, Ohio.

in engine lathes as well as on drill presses where drilling and reaming or drilling and tapping are to be done. When the work is mounted on the carriage of the lathe and the turret is placed in the headstock the only tool that rotates is the one that is in working position. The other tools and the body of the turret do not move, and stand in such a position that all of the tools are out of the way of the work. The body of the turret is of gray cast iron, the driving spindle is of steel and has a dowel pin in the center which brings the drill sleeve in perfect alignment with it. A driving pin is set in the end of each spindle which engages a milled slot in the drill sleeve when that spindle is in use. The spindle is engaged and disengaged by an eccentric, which is operated by a small lever that works very easily and can be manipulated with the thumb and finger.

A strong point is made of the time saving which can be effected with this attachment. On a test it is claimed to have saved more than 65 per cent. of the time required to do a certain piece of work on a single spindle machine and 25 per cent. of the time required to do it on a multiple spindle drill. An equally important advantage is that it does not require an expert to handle it. The turret weighs 19 lb. and can be used in any single spindle drill press without the necessity of adding to the counter balance of the drill head. In its construction there are no springs and its motion is positive.

## The No. 6 Beaver Die Stock.

For threading small sizes of pipe, the Borden Company, Warren, Ohio, has added to its line of Beaver adjustable easy working die stocks, the No. 6, herewith illustrated, which, like its predecessors, has a range of four sizes, without removing and substituting other dies. This tool cuts threads on ¼, ⅜ ½ and ¾ in. pipe, while the two larger and older die stocks thread 1, 1¼, 1½ and 2 in., and 2½, 3, 3½ and 4 in. pipe, respectively.

To carry out the four-in-one idea in this smallest stock required an ingenious construction, for unlike the

Fig. 1.—The No. 6 Beaver Die Stock Made by the Borden Company, Warren, Ohio.

two larger ones, the four sizes of pipe it cuts do not have the same pitch of thread, so that it was not possible to allow for them by a simple in-and-out adjustment of the dies. The ¼ and ⅜ in. standard pipe threads have one pitch, and the ½ and ¾ in. another, so that two sets of dies were necessary, but these are both retained in the holder at all times, as may be seen in Fig. 1, and one or the other is brought into play by manipulating a single cam, which retracts one set while it advances the other. The cam has a series of eccentric slots and concentric slots so arranged that the set of dies not in use is retired, while the other is being adjusted to cut its respective sizes or any variation therefrom. There is no danger of conflict, for one set cannot get in the way of the other.

For the two sizes which can be cut with each set, the in-and-out adjustment is made as before and with the same cam. In common with the older stocks, threads over or under standard size can be cut by shifting the cam to alter the adjustment. The dies are held in posi-

Fig. 2.—Rear View, Showing the Universal Device for Centering All Sizes of Pipe.

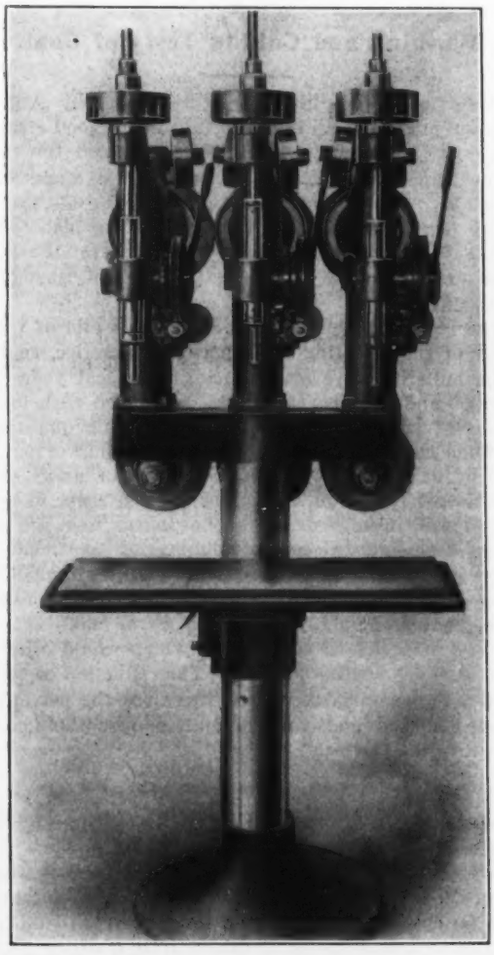
tion by a lock of new construction, which it is claimed cannot slip. The only occasion for removing dies is to sharpen them. This is easily done, and the sharpening consists of merely grinding the edge after the manner of sharpening a chisel.

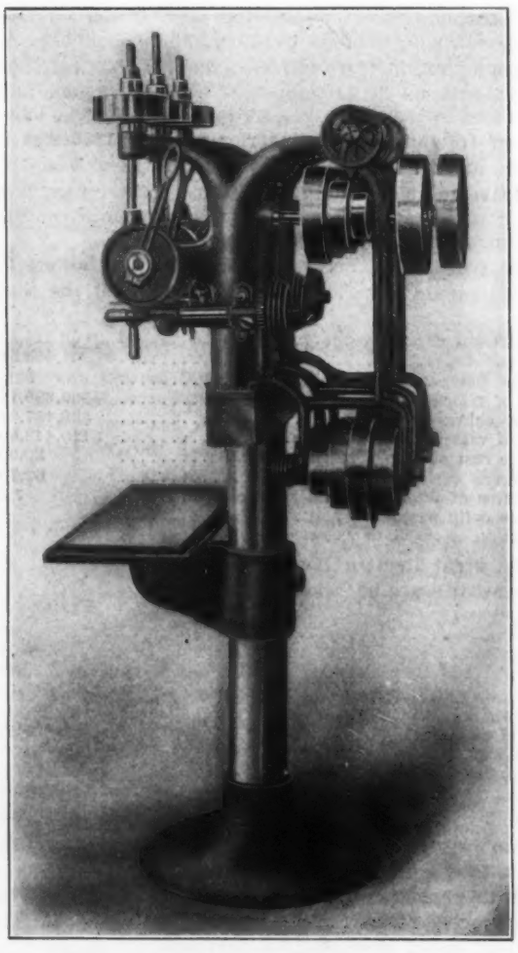
The other principal difference between the No. 6 and the larger die stocks is that the dies are of the ordinary taper form and not the receding short type. The advantage of the short dies which cut a taper thread by separating as the threading proceeds, is that the effort required is less because the friction is less, but this is not so important in cutting threads on small pipes. Another difference which is an innovation is the substitution of an adjustable pipe centering device for the bushings ordinarily used, shown in Fig. 2. This is provided with hardened tool steel jaws and does away with loose bushings, so that the tool is in all respects self-contained. The net weight of the complete stock is 8 lb.

The Webb Motor Fire Apparatus Company Vincennes, Ind., has been incorporated, with a capital of $100,000, to manufacture and deal in motor fire apparatus designed by A. C. Webb, formerly of Joplin, Mo. The company has secured the plant formerly occupied by the Star Shovel & Range Company, which it is expected will shortly be put in operation. Most of the directors of this company were former members of the Star Shovel & Range Company.

## The New Corbin-Church Drill.

The Corbin-Church Company, Plainville, Conn., has brought out a new power feed manufacturers' drill, so designed that the feed will automatically knock out and re-engage itself, insuring no waste of time where the operator has duplicate work to perform. Combined with this feature is a device for automatically disengaging the feed should the drill point strike a hard spot or other obstruction to its normal progress through the work. The spindle drive is from a three-step cone pulley mounted at the back of the column. On a three-step secondary cone is a pinion meshing a gear on the worm shaft. The worm is loose on its shaft, and is held in engagement with it by a spring actuated positive clutch. When abnormal pressure is brought upon the drill point the worm travels on its gear, disengaging the clutch and letting the drill run free, until with the removal of the pressure the clutch flies back again into engagement.





Two Views of the New Manufacturers' Drill (Triple-Spindle Pattern) Built by the Corbin-Church Company, Plainville, Conn.

On the worm gear are two cams. The worm shaft is hung on a pivot, and is held in engagement with its worm gear, except when it is knocked out by one of the cams. The second cam acts to place the worm and gear in engagement again. The cams are timed so that the drill will operate constantly and automatically.

The distance from center of each spindle to the column is 5⅝ in., and the greatest distance from the table to the spindles is 33 in. Each spindle has a vertical movement of 4½ in., for general work the recommended speed for the driving pulley is 500 rev. per min. The machine is furnished with three feeds for different sizes of drills, and has a capacity up to ¾ in. It is built with any number of spindles desired. The single spindle machine has a table 11 x 12 in. in size, and weighs 325 lb.

An error was made in the issue of *The Iron Age* of May 7 in stating that D. D. Williams & Co., Bakewell Building, Pittsburgh, Pa., had been appointed sole agents in this country for Cammell Laird & Co., Ltd., Sheffield, England. The sole agents in this country are Lionel & Montagu Samuel, 25 Cliff street, New York. Messrs. Williams & Co. have been appointed agents for western Pennsylvania only.

Jacob H. Schiff, the eminent banker, who has just returned to New York from an extended European trip, says: "Conditions in the United States appear to be to a large extent the determining factor over all. Everywhere eyes are turned to this country, and it is felt that prosperity can nowhere return until the United States has recovered from the recent crisis. I have stated that it is my opinion, in answer to many inquiries made to me in Europe, that we are not likely to return to normal conditions until—after the Presidential election—it can be fully seen what kind of tariff revision we are going to have, this being probably a more far-reaching economic question than any other before the country, not excluding even currency reform."

D. D. Pendleton has been appointed the Pittsburgh representative of the Wheeler Condenser & Engineering Company, Carteret, N. J., and will hereafter handle the sale of Wheeler specialties in that territory. He has during the past 15 years occupied various positions in the manufacturing, engineering and sales departments of the Westinghouse companies. His offices will be located in the Frick Annex.

The construction of a hydro-electric plant to develop 2000 hp. is in contemplation by the Martin Power Company, West Plains, Mo. It is proposed to build a dam and power plant on Big North Fork River at McCabe and transmit current for power and lighting to West Plains, 20 miles distant. It is stated that on account of delay in securing franchises work will not be begun for six or eight weeks.

## The Commerce of the Great Lakes.

Little is known, even by that part of the public most directly interested, of the statistics of traffic on the northern lakes of America. The iron trade appreciates that over these lakes floats the ore for most of the nation's steel and knows that two-thirds of the lake traffic is ore. But of the vast extent and rapid growth of that trade ideas are remarkably hazy. The Government has just issued its annual statistical report of lake commerce, passing in and out of Lake Superior, supplementing it by figures and estimates of the traffic of the Detroit River, which includes not only most of the Lake Superior trade, but a large part of that originating on Lake Michigan. This report gives greater details than those presented in *The Iron Age* of January 2.

It is well to note that from the year 1855, when the first ship canal of modern times was constructed at the outlet to Lake Superior, and the year, too, when Lake Superior began to ship iron ore, there has been an average annual increase in Lake Superior traffic of about 20 per cent., and that the totals of traffic have gone from 14,503 tons in 1855, to 58,217,214 tons in 1907. The movement of freight to Lake Superior prior to 1855 was by portage around the rapids of Sainte Marie, and in 1851 this traverse amounted to 12,600 tons. There was, however, a prior canal, occupied in the eighteenth century, but destroyed on American conquest.

The year 1907 showed a traffic account as follows for the two canals, American and Canadian, and the three locks:

| | |
|---|---|
| Total freight carried, tons | 58,217,214 |
| Total mile-tons | 48,221,465,547 |
| Average distance carried, miles | 828.3 |
| Value of freight transported | $569,830,188 |
| Freight charges paid | $38,457,345 |
| Value of vessels passing canals | $110,443,500 |
| Average cost of transportation, ton-mile | $0.008 |
| Passengers carried | 62,758 |
| Proportion of ships using American canal | 73% |
| Average daily passages | 86 |
| Proportion of traffic in American ships | 95% |

The great item in freights was, as usual, iron ore, and statistics are as below:

| Articles. | Tons. |
|---|---|
| Copper | 89,959 |
| All grains | 3,939,079 |
| Stone | 898 |
| Flour | 687,127 |
| Iron ore | 39,594,944 |
| Pig and manufactured iron | 307,941 |
| Lumber | 1,105,811 |
| Merchandise | 1,022,654 |
| Salt | 68,626 |
| Coal | 11,400,095 |

Iron ore, it will be seen, formed two-thirds of the total traffic, both ways of Lake Superior.

All this business was done in 238 days, that being the period during which the Canadian Canal was open. The American Canal was open five days less.

During the year there was a marked increase in number of ships of the largest class, 500 ft. and over. In all 43 new ships, all steel, were put in commission during the year, and of these 25 are more than 500 ft. long, carrying from 9000 to 14,000 tons per cargo. The percentage of freight carried by vessels other than steamships is constantly diminishing, and in the year under review was down to 9 per cent. None of this was on sailing vessels, strictly so-called, but on tow barges and unrigged craft. None of these types were built during the year. The largest cargoes of the year were as follows: Steamship J. P. Morgan, 13,800 tons, on a single trip, 339,151 tons carried during the season and 43,296 miles run. Unrigged craft, John Smeaton, 9408 tons, 152,144 tons carried in the season and 27,039 miles run in year. Both these ships are in the fleet belonging to the United States Steel Corporation. In one day a total of 121 ships, carrying 487,649 tons, passed through the American canal. Ships spent in this canal, locking through and waiting for lockage, an average of only 129 min., and single ships have been locked through the lift locks in 8 min.

The figures of traffic through the Detroit River are not precise, as they are computed from the net registered tonnage of ships. This computation shows a freight tonnage passing up and down that river of 71,226,895 tons, of of a value of $697,311,302. There is, indeed, no other waterway with such a record. This is an increase of 7,418,324 tons for a single year, though accompanied by a decrease of 979 ships.

The cost of improvements at St. Mary's Falls, including locks and canals alone, has been $20,000,000. But this does not include the great cost of straightening, widening and deepening the channels from Lake Huron, at the detour, to the foot of the Falls, and which must represent an outlay at least as great. In this work is the tremendous rock excavation through the West Nebish, just made, and numerous other gigantic works carried on during many years. But a cost of $40,000,000 represents but a small portion of the annual saving in freights over what would be required to pay rail charges from the head of Lake Superior to the head of Lake Huron for the mass of goods carried. D. E. W.

## Washing and Coking Tests of Coal.

Coals which are in the raw state utterly unfit for steaming purposes can be made into fairly good steaming coals by washing; and coals quite unsuited for coking can be made available for such use by the same simple operation. The facts in relation to these coals, brought out by tests carried on at the fuel testing plant of the United States Geological Survey at Forest Park, St. Louis, are announced in a bulletin (No. 336) just issued by the Survey.

The tests of washing and coking coals and of the behavior of the resulting coke in cupola practice, reported in the bulletin, were made during the fiscal years 1905 and 1906 and were carried on in connection with investigations of the steaming and gas producing qualities of the same coals and of the possibility of improving such coals by briquetting. Preliminary tests of many of the coals as received from the mines showed them to be too high in ash, in sulphur or in phosphorus to make satisfactory metallurgical coke without prior treatment, and some coals possessed better coking qualities than others. It was found that the washing of some coals so reduced the percentage of ash and sulphur as to make available for the production of coke a coal which would otherwise have no value for this purpose. The reduction of the impurities by washing, of course, increases the percentages of fixed carbon and volatile matter over the amounts present in the raw coal.

### Specific Results of Some Washing Tests.

Altogether 101 regular washing tests and 12 special tests were made. The results of these tests show an increase in moisture of 10 to 30 per cent., a reduction in ash of 20 to 60 per cent. and a reduction in sulphur of 10 to 50 per cent. For example: A raw coal containing 5.05 per cent. of sulphur contained after washing 2.47 per cent., a removal of 55 per cent. The ash in a raw coal containing 42.56 per cent. was reduced by washing to 29.67 per cent., a total removal of 65 per cent.; that in a raw coal containing 15.72 per cent. was reduced to 10.16 per cent., a total removal of 41 per cent., and that in a coal containing 9.81 per cent. to 5.38 per cent., a removal of 59 per cent. The cost of washing coal in Germany is said to range from less than 5 cents to 10 or 12 cents per ton; in the United States from 8 to 18 cents per ton.

The coking tests were made in ovens of regular beehive pattern, and the report covers 192 tests made on 100 coals, the samples having been collected from 17 States and one Territory. Of these tests, 100 were made on raw coal, 82 on washed coal, and 10 under miscellaneous conditions. In some of the tests it was found that the addition of pitch produced coke from coal which when tested raw gave either no coke or coke of inferior quality. In other tests the addition of pitch did not improve the quality.

After the dismantling of the plant at Forest Park in the spring of 1907 a new fuel testing plant, with much improved apparatus, was established at Denver. At this plant experiments in washing and coking will be made on coals mined in the Rocky Mountain region, with a

view to determine what can be done to make them available for the production of metallurgical coke.

**Cupola Tests on Coke.**

The cupola tests on the coke, which are reported by Dr. Richard Moldenke, were carried on along lines described in Professional Paper No. 48 of the Survey. The bulletin comprises the results of 170 tests, and the data concerning record of melt, taken in connection with the indications of the sources of the coals and the anelyses of the corresponding coke, furnish interesting facts as to the melting ratio of iron to coke, the rate of melting per hour, and the amount of iron recovered. Equally interesting is the table giving the chemical effect on iron from cupola tests of cokes made from coals mined in various States.

The washing tests are reported by G. R. Delamater, the coking tests by A. W. Belden, and the report is prefaced with an introduction by Prof. Joseph A. Holmes, in charge of the technologic branch of the Survey.

## The Matteson Friction Saw Sharpener.

A machine designed to simplify and facilitate the sharpening or dressing of friction metal saw disks has just been brought out by the Matteson Mfg. Company, Chicago. The accompanying engravings, one of which is an enlarged detail of the other, show a disk mounted on the carriage in position for grinding, and clearly illustrate the manner of using the machine and convey a fair idea of its general construction. The disks which it is intended to sharpen are such as are used for cutting structural shapes, rails, &c., either hot or cold, and are made of homogeneous steel without peripheral serrations. Depending wholly upon friction for their cutting qualities, it is essential that the circle be kept true and a square edge be preserved. The natural effect of wear is to round the edge and at the same time spread out an overhanging burr on each side. When this effect becomes pronounced the cutting power is diminished, and it then becomes necessary to restore a square edge on a true circle. Heretofore this has been accomplished in a lathe by cutting off the rim of the disk about 1 in. below the circumference; the overhang of the ragged burr makes it impracticable to cut closer to the edge. This means, while effective in its results, was not only slow, but added materially to the rapid reduction of the disk. It is claimed that the grinding machine, devised as a substitute for the turning process, not only turns up and dresses a disk with a cut only ¼ in. deep, but does it with great speed and accuracy.

The disk grinder is constructed upon the same general lines as the saw tooth sharpening machines built by the company, one of which was illustrated and described in *The Iron Age* December 5, 1907. Some important modifications are, however, introduced to fit it for the special service required. The principal departure is found in the disk revolving mechanism, which operates continuously instead of intermittently. Two rollers mounted on the ends of inclined parallel shafts running in opposite directions bear against the two sides of the disk near its rim and revolve it by friction. One roller shaft is driven by spur gears from the other, which is in turn driven by bevel gears from a short horizontal shaft. The latter carries a sprocket wheel of 36 teeth, which is connected by a chain to an eight-toothed sprocket on a parallel shaft in the lower part of the frame and hidden from view in Fig. 1 by the disk. At right angles to the lower sprocket shaft, and connected with it by bevel gears, is another shaft carrying a two-step cone pulley, which is belted to a pulley located just back of the grinding wheel on the main driving shaft.

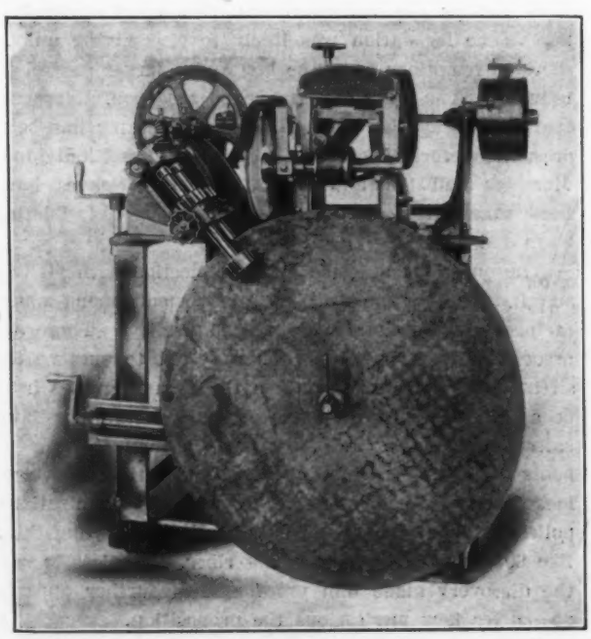


Fig. 1.—The New Friction Metal Saw Sharpener Built by the Matteson Mfg. Company, Chicago.

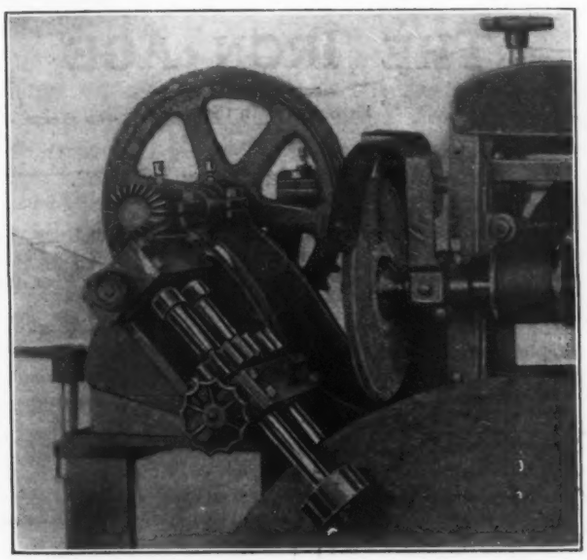


Fig. 2.—Enlarged Detail of the Working Mechanism.

The tension of the friction rollers revolving the disk is regulated by hand wheels on the front side of the bearing boxes. Vertical and lateral adjustment of the disk is furnished by the carriage on which it is mounted, the movement being controlled by the crank levers seen at the left in Fig. 1. The emery wheel arbor brackets are attached to a movable gate, best shown in Fig. 2, which is raised and lowered to regulate the depth of cut by the hand screw at the top of the gate frame. A special centering cone provides quick and accurate adjustment of the disk in position for grinding. The machine is 3 ft. high, occupies a floor space of 31 x 26 in., will handle disks from 12 to 72 in. in diameter and weighs 800 lb.

The Senate Finance Committee has agreed to an amendment to the Customs Administrative bill, which has been passed by the House of Representatives, the effect of which is to continue the present routine appeal from the General Board of Appraisers to the Circuit Court in classification cases, with a change from the present arrangement to the extent of requiring all the evidence to be presented before the Board of Appraisers. As the bill passed the House it provided for appeals directly to the Circuit Court of Appeals, which aroused much objection from importers and others.

The Mesta Machine Company, Pittsburgh, Pa., recently shipped to the Youngstown Sheet & Tube Company, Youngstown, Ohio, a Helander barometric condenser, the condenser vessel being 114 in. in diameter, to serve blowing engines and other equipment aggregating 15,000 hp., and two Mesta tandem crank and flywheel dry air pumps, 14 and 34 x 24 in. stroke. The company also shipped to the Inland Steel Company, Indiana Harbor, Ind., a 38 in. and 72 x 60 in. Mesta tandem compound Corliss horizontal mill engine of 5000 hp., the shipment aggregating 715,000 lb.

# THE IRON AGE

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## The Machine Tool Builders and Their Prices.

The question of prices will hardly fail to be an absorbing topic of discussion during the gathering of the members of the National Machine Tool Builders' Association next week, at Atlantic City. While no price agreement can constitute a part of the action of the association as a body, yet, when manufacturers in the same general line from all parts of the country get together in these trying times, it may be safely assumed that they will not evade the exchange of opinion with one another on a subject of such vital importance. Undoubtedly they have all been subjected to severe pressure in withstanding the tendency to lower prices. Under the circumstances it is remarkable that they have been able to maintain prices so well with such restricted sales and diminished income.

It is known that some exceptionally strong influences have been brought to bear to effect a reduction in prices. A few of the American dealers believe that good results would come with a downward trend in the lists. The European dealers seem to be practically a unit in this theory. They have employed all the forces at their command to persuade the manufacturers whom they represent that such a course is the correct one. Orders have been offered at a reduction in the hope that they would be too tempting to resist, but have been declined. Some of these orders were placed later at unchanged prices, while others have been withheld. One manufacturer states that in two out of three such cases he received the business in spite of his refusal to grant concessions. The machine tool people have wisely kept to their lists, instead of yielding to the temptation of additional speculative orders at a time when they were most needed.

The influence of the National Association has been a very important one. It had been realized that the organization had worked out most beneficial results during times of prosperity. It has now been demonstrated that its effectiveness is just as great when business is dull and when a stiffening influence is most needed. If five years ago the prophecy had been made that during a period of dull business there would be no general cutting of prices it would have been regarded as ridiculously visionary. Before the day of the organization, competition took the extreme course; orders were sought by underbidding, almost regardless of costs, with the advantage all with the buyer. Yet the relative volume of orders was no greater, apparently. Customers have hardly become used to the new conditions. They have probably been nettled at their inability to secure bargains in equipment. Of course, some buyers have been holding off in the expectation of better prices, although it is doubtful if much business has been actually lost from this cause.

Now that the spirit of co-operation more thoroughly prevails, and manufacturers are more strongly inclined to commune with and take counsel from one another, it is likely that the result of the gathering at Atlantic City will be as beneficial as any meeting in good times. Even if the consensus of opinion should favor a reduction of prices, and the majority should thereafter name lower terms, despite the opposition of those who believe in making no concession to the spirit of depression, the opportunity offered at such a gathering as this to compare views and exchange opinions and experiences must operate to maintain cordiality among those in the trade and further promote the desire for harmonious action. An orderly reduction of prices, if that should seem to be desirable, would be far better than an indiscriminate scramble for business at any price, as in the old days when manufacturers seldom knew one another. Conditions would then be favorable for a rapid restoration of prices when business revives.

## Manufacturers' Associations and Legislation.

Organized labor probably has never been so active in pressing its own programme upon Congress as in the past three years. With a President favorable to some, at least, of its demands, it has redoubled its efforts to win a majority in Senate and House to its proposals for the eight-hour day, an antiinjunction act, anticonspiracy act and an employers' liability law. This activity has served to give more prominence to the counter movements among employers of labor. Now that industrial conditions have prostrated the business of the walking delegate, the employers' associations have had more time and resources for combating the unions' legislative campaign. Employers have been waking up to the fact that in the absence of concerted effort to have their interests safeguarded, they have given the union lobby a good lead in its effort to upset by legislation some of the important findings of the courts. It has been the burden of many discussions at employers' conventions in the past two or three years that unless the union tactics at Washington were met by the manufacturers with equal aggressiveness, some legislation was likely to pass giving unions special exemptions from the law and a larger control of industry. The warning came none too soon. More recently the way the case of the manufacturer has been presented before congressional committees and individual Members and Senators shows that some leaves have been taken from the trade union book on legislative ways and means.

The question has come up in connection with all this activity, whether the association movement among manufacturers will maintain its present vitality? There are associations that need not be expected to survive the sifting process. Some of them the manufacturers have been led to join by the same persuasions the successful salesman employs. It is told that a manufacturer on being solicited to join a new co-operative movement looked up his memberships in various organizations, political, social and commercial. He found something like 60 to which he was a subscriber. Needless to say, the discovery made him proof against further appeals, no matter how meritorious the proposition.

The theory is that the manufacturer is too busy, and single handed too inconsequential, to wield any great in-

fluence outside of his own community. Thus has arisen the profession—at least it is more and more coming to be that—of the association secretary, commissioner or manager. A small army of such men is doing intelligently and with success work for which the employer has neither the time nor, oftentimes, the ability. Whether it be offense and defense against labor unions, whether it be opposing or advocating a definite piece of legislation or the carrying on of a campaign of education, either among workmen or the general public, it has been found that co-operation is the way to results. The practical questions come up, how many organizations a manufacturer can afford to support and how many can carry on their work without overlapping and without needlessly stirring up popular antagonism.

A few years ago the machinery and metal working and the foundry trades attempted to arrange an organic union of the two associations, largely on the ground of economy; but it was decided, after long consideration, that a merger was impracticable. However, the tendency is toward fewer organizations. Manufacturers now scrutinize more closely than ever propositions that involve the carrying on of propagandas. At this juncture they are disposed to concentrate on those that meet the labor union assault by the most direct and vigorous methods. In the present state of turmoil over economic and social questions the most revolutionary proposals are apt to get a hearing. The demands of the radical types of labor unions will be multiplied and all pressed at once in the hope of getting some. Meantime conciliation, arbitration, education, welfare work and all the better ways of progress in handling the labor problem stand aside. The labor unions' decision to enter politics in a way not attempted before has put upon manufacturers the necessity of prompt and energetic action. In such an emergency, an important asset is the machinery that has been put in such good working order in the formative years of the association movement.

## Strikes Cloud the British Iron Trade Outlook.

The overshadowing influence in the British trade situation is the depression in shipbuilding. As has often happened when the outlook was unfavorable, the labor organizations are making a bad matter worse. For the past five months negotiations have been conducted between the shipbuilders and the officers of some of their employees' unions relative to a general reduction of wages except those of boiler makers. The cut proposed was 1 shilling 6 pence a week, which was the amount of a general advance made in March, 1906, when the yards were full of work. The Northeast Coast woodworkers refused the reduction, though it had been accepted in other districts and by other classes of workers in their own district. In January the employers agreed to make the immediate reduction 1 shilling a week and defer the 6 pence additional until March. Some of the woodworkers' unions agreed, but others refused and walked out. Then a lockout was ordered by the employers, effective February 1. It was postponed for a time and negotiations went on. The striking unions raised a new issue, that of providing for the prevention of strikes and lockouts in the future and for arbitrating the pending question. The employers replied that as a large portion of their employees had accepted the reduction, and as operations could not continue without it, it was not arbitrable. Meantime the men refused to give their officers authority to make a settlement, and a lockout was enforced by the owners on May 2, when 16,000 woodworkers were dismissed from shipyards in England and Scotland. As the metal workers at the shipyards cannot continue at work long after the woodworkers have stopped, the outlook is for a period of real distress in that great industry, unless the men accept the recommendations of their leaders in view of the change that has come over the industry in the past year.

At the end of the first quarter of this year 415 merchant vessels of 847,501 tons were under construction at British shipyards, as against 585 vessels of 1,306,087 tons at the end of March, 1907, a decline of 458,000 tons. The *Iron and Coal Trades Review* notes that no such decrease in 12 months has occurred since September, 1884, when the falling off from the previous September was 469,000 tons. All reviews of the situation agree that apart from labor troubles a long period of depression is ahead of the shipbuilding industry. Lessening foreign trade, overinvestment in floating property—over 2,600,000 tons of steam vessels having been added to the British merchant marine in two years—and a great increase in vessel construction by other countries, have caused the laying up on the Tyne, the Clyde and other rivers in Great Britain of hundreds of steamers that cannot find profitable employment.

Under the conditions described the stopping of practically all the shipyards in Great Britain through a labor dispute involving originally but a fraction of the men employed is deplorable. Added to this is a strike of very considerable proportions among members of the Amalgamated Society of Engineers, the leading union of machinists in Great Britain. Contrary to the advice of their officers, many of the machinists have struck. As stated by the union's leaders, the real question, so far as the organization is concerned, is "whether a section of the society is to be allowed at will to draw large sums of money without check from the funds of the society as a whole, and against the wishes and advice of the representatives of the society as a whole."

The prospect for the British iron trade, already declining from causes of international import, is far from bright, under the added weight of such ill-considered action by the labor unions.

## The Prosperity Movement.

The National Prosperity Association, of which E. C. Simmons of St. Louis is president, is a working body. Usually a movement of this kind is merely sentimental and ends with the passage of resolutions or the adoption of an address to the public. The men who are back of this organization, however, are practical men who are accustomed to handling large affairs and who take hold of matters in a practical way. They are certainly working vigorously to bring about the restoration of confidence. As far as improvement in sentiment is concerned, that may go a long distance before tangible results are realized. But the association proposes to do much more than this. It is working energetically, and business interests will hope effectively, in endeavoring to check the baiting of railroads and industrial corporations. If the business interests of the various States can be induced to make a concerted effort in this direction, they would unquestionably be able to exert a strong influence in the abatement of hostile legislation against interests which bear a most important part in building up and sustaining the material welfare of the country. It is especially satisfactory that this movement toward securing business peace and ending disastrous agitation had its inception in the Southwest and not in the purlieus of Wall

Street. In fact, Wall Street has been disposed to scoff at the entire proposition, believing it to be chimerical. As it is now developing, however, more serious attention has been given it and those who were most skeptical are beginning to believe that something of benefit to the country may be accomplished.

### Difficulty in Getting Prompt Shipments from Mills.

It would seem that in times like the present, when the volume of business offered is insufficient to supply mill capacities, there would be no difficulty in securing prompt execution and shipment of orders. While this is the case, generally speaking, in some lines the opposite prevails. For instance, tool steel, because of developments growing out of present conditions, cannot always be furnished as promptly by the makers as at other times. This is due in part to the fact that large producers have allowed their stocks to run lower than usual and it is not uncommon for them to be out of certain sizes. Then, too, special rollings are required to supply unusual sizes or special grades of steel in regular sizes, and these must await the accumulation of a sufficient quantity to justify rolling.

Ordinarily, this would not occasion much delay, but now that most of the mills are not running to exceed half time it takes perhaps twice as long to get through the complete range of sizes. This has worked somewhat to the advantage of certain mills making a practice of getting out special material, particularly those supplying agricultural grades. Having but limited reserve stocks on hand, and ordering in small lots for immediate requirements, buyers are naturally led to seek the nearest source of supply; and the result is that a good many orders heretofore placed with distant mills are being diverted to those closer at hand. Out of this grows the curious anomaly of a stagnant market and at the same time difficulty in getting prompt delivery of material required.

## CORRESPONDENCE.

#### Coke Ovens for the North German Lloyd.

*To the Editor:* In an article appearing in your issue of February 27 on the "Von Bauer Coke Oven System," it is stated that the Gesellschaft für Erbauung von Hüttenwerksanlagen, in Düsseldorf, "is now building a steel works with a battery of Von Bauer ovens for the North German Lloyd interests." As I was rather dubious as to the accuracy of the statement, I addressed a letter to the North German Lloyd asking them to inform me whether the information was in accordance with the facts. From the inclosed retyped copy of my letter to the latter, and the reply I received thereto, of which I also inclose you a retyped copy [printed below], you will see that the Düsseldorf company is neither building a steel works nor a battery of Von Bauer ovens for the North German Lloyd interests, so that the statement is, to say the least, misleading to those of your readers who are really interested in the latest achievements of the various constructors of modern coke ovens, and who look to your valuable paper for information of a reliable character.

H. KOPPERS.

ESSEN-RUHR, April 24, 1908.

(COPY.)

BREMEN, April 21, 1908.

Heinrich Koppers, Essen (Ruhr).

Yours of the 10th inst. addressed to the board of the North German Lloyd has been turned over to us for reply. We can only advise you in answer to it that the article in *The Iron Age* certainly is based upon incorrect information, since for the present the Norddeutsche Hütte proposes to add a coking plant to the blast furnace plant which this company is building itself. At this time the selection of the system for the coke plant has not been made. Moreover, it is not likely to be made until the summer.

The Gesellschaft für Erbauung von Hüttenwerksanlagen in Düsseldorf has not been intrusted with the building of a steel plant, &c., by the North German Lloyd.

(Signed) NORDDEUTSCHE HÜTTE ACTIENGESELLSCHAFT.

#### A Blast Furnace Operator on Ore Prices.

*To the Editor:* This communication is called forth by a remark in *The Iron Age* of May 7, under the head of "The Iron and Metal Trades," which is as follows:

> The maintenance of ore prices will put furnace companies who do not control their own ore supply in a very serious position, in competition with Southern makers and Northern stacks that smelt wholly or partly ores mined by themselves.

This statement raises several questions:

Can the South as a general proposition get a reasonable or any profit out of present selling prices?

Is the profit in Lake Superior ores too high, considering everything—cost of production, royalties and all conditions pertaining to them?

What would be the results flowing from the reduction of the price of Lake Superior ores at this time?

To an independent pig iron maker, without any interest whatever in a financial way in ore mines, the correct answer to these questions is of serious importance. The assumption is, of course, that *The Iron Age* is of the opinion that the South can get a profit at present selling prices, and that the price of Northern ore is too high, either on this account alone or on account of there being too much margin of profit in it, or both.

I will not dwell on these matters to weary you, as you will catch my line of thought. A few weeks ago *The Iron Age* had an editorial touching the Southern situation in a very proper manner. The balance sheets of Southern plants over the past 5, 10 and 20 years do not show any abnormal dividends, notwithstanding the brilliant exploiting of the great natural advantages of that section, largely for the purpose of attracting Northern money and making a market for securities on the stock exchanges. As a usual thing there is a wide difference between making pig iron with a blast furnace and a lead pencil. If, however, the South has all the advantages some claim, and you seem disposed to admit, should the Northern ore producer be sacrificed to meet that condition if the selling price of his ore to the independent furnaceman is not now unnaturally and unreasonably high?

In the first place Southern iron is but a small part of the total production when normal conditions obtain. Can the South be expected to supply the requirements of this country on present low basis of selling price, or at any price? Will the high phosphorus, high silicon, weak iron of that section, displace the strong, low phosphorus Northern iron? In many instances the irons of the South and North are not interchangeable or competitive. That Northern producers relax prices and sell below cost is their own fault, occasioned by a softening of the backbone and not by the South.

If the South really can undersell the North, with all costs entering into pig iron at the North on a bedrock basis, then a partial solution of the matter may be found in freight rates from Southern furnaces to Northern consumers. Why not advance the rates to the North on Southern pig iron $1 to $2 per ton? This would be wiser and better than wiping the Northern ore and iron interests off the map, and would it be unfair or unreasonable? The South on its own evidence can stand it.

As a usual thing the raw material of the Northern blast furnaces, every pound of it, is hauled by the Northern railroads, affording an immense tonnage at fair rates, while the raw material of the South gives the railroads of that section but little business comparatively. Let the railroads of the North participate in extremely low freight rates from the South, distributing the pig iron of that section over their own territory without any reciprocal business, on rates less per ton than they give the plants for which they assemble raw material, and from which they haul the manufactured

article, with no other purpose, it would seem, than to kill the goose that lays their golden eggs. Here is food for reflection and a wide field for reform.

If, on the other hand, the price of Northern ore is too high and the independent (or rather, dependent) furnaceman is paying an unreasonable and unnatural price for it, which is not proved nor admitted, then the situation changes. But even with a changed situation it is extremely doubtful if it would be good policy to reduce the price of ore this season. As a general thing every blast furnace in the country using Lake Superior ores has from four to six months' stock of this material on hand, purchased in 1907, paid for, and carried over on account of the late panic and ensuing depression. Some furnaces also have large stocks of pig iron. To reduce the price of ore this year would simply drag down the price of pig iron correspondingly, still further demoralize the market, disturb returning confidence, and cause great loss on the ore and iron now in stock. There is no good reason why the furnacemen should be subjected to this loss. At $17 on board cars, furnace, they can all get out without loss and some with a profit, and this figure is low enough for pi giron, and low enough to suit consumers who do not want iron any cheaper, provided there is stability and that there is no donger of lower prices later.

Therefore, if the price of Lake Superior ores is too high, considering cost of production and the general conditions relating to them, there should be no reduction this year, and if made at all it should be so gradual as not to be harmful, sometime in the not near future. It would be demoralizing, foolish and almost criminal to make any reduction now, in the face of all that has been said on the subject and on account of the plans based on the assurance and statements that none would be made.

An early movement was inaugurated to maintain prices in order to prevent loss and bankruptcy, and has been fully justified. It would be worse than folly to throw up the sponge now. A few weak, smart and selfish pig iron producers, as well as producers in other lines, have "scabbed" and forced prices below the line of profit. It is always so in time of depression and slack demand. But a great industry should not be dragged down by such action. There should be more of the spirit and loyalty of the labor union man in the manufacturer. It would be better for all concerned, both laborer and employer. It would be better also if law and public sentiment did not designate all effort and co-operation on the part of manufacturers and railroads to prevent loss and remain solvent as "conspiracy in restraint of trade." The law protects and the public sentiment upholds the plumber, bricklayer and coal miner in any effort or means, legitimate or otherwise, to advance and maintain wages to extremes that are often absurd and unreasonable; but the manufacturer or merchant who follows more moderate lines is in danger of a fine or the jail if he simply seeks to escape ruinous competition by reasonable co-operation.

Every one knows that the high wage rate has more to do with the high price of commodities, the cost of living, building, and so forth, than anything else, and also that efficiency and discipline are lost through it and the causes that produce it, to the great detriment of all concerned. No one regrets the high wage in itself, only the results that flow from it, which in time may be tempered, let us hope and pray.

But why this discrimination on the part of the law and public opinion between labor and capital as regards co-operation for the betterment of conditions? Why is the one shielded and encouraged (even by the President of the United States), while the other is denounced and persecuted for doing the same thing? The only answer is: The labor union has the votes.

*The Iron Age* is in position to render the country great service by intelligent and fearless advocacy of what is right, practical and commonsensed.

FURNACEMAN.

Under the title "Struthers Cement" the Struthers Furnace Company, Struthers, Ohio, issues an unusually attractive pamphlet, 9¼ x 11 in. A series of large halftone plates illustrates some of the prominent construction contracts on which Struthers slag cement was used. These include blast furnace, steel works and coke oven construction, as well as foundation, retaining wall and column work. The company delivered at the Ohio Works of the Carnegie Steel Company last season 75,000 barrels of cement and a second contract has brought this amount up to nearly 100,000 barrels. At the new open hearth steel plant under construction at these works upward of 1000 barrels of cement a day was used at times, the forms being removed and rebuilt as rapidly as a force of 100 carpenters could do the work.

## Canadian Rail Prospects.

TORONTO, May 11, 1908.—In the course of a few weeks it is said the Algoma Steel Company's plant will again be in full operation. The closing down is understood to have had some effect to hasten the placing of Government orders. Until the supplies before Parliament are voted through the funds will not be in hand for large orders, and the progress of the passage of the estimates has been momentarily checked by a conflict of the Government's bill in amendment of the Election act. Into the question at issue between the Government and the opposition in respect to this bill, it is not necessary to enter. Unless some concession is made to the opposition demands for modification of the bill, the passage of the estimates will be obstructed. The earlier the two sides come to an agreement for the ending of the deadlock the sooner will money be supplied for the Government's requirements.

It is reported that a large order to supply rails to the Government for the Eastern division of the National Transcontinental Railway has just been closed by the Dominion Iron & Steel Company.

Construction has begun at the Pacific end of the National Transcontinental line. A 100-mile section of main line, from Prince Rupert eastward, and a 60-mile branch line connecting with that section is now started upon by the contractors, who expect to have this $10,000,000 work completed in 18 months. Work on the 125-mile section west of Edmonton is also being pushed. Track laying between Winnipeg and Edmonton has been completed over 356 miles of the total 793 miles, the remainder of which is to have the rails laid upon it before the close of the summer. On the branch line from Fort William, which is 205 miles long, 120 miles has the steel upon it. It will only be by rushing operations that the section of the main line between Winnipeg and this branch will be made ready for traffic this year, for the difficulties of construction on that section are great. Labor, however, is no longer scarce. The Fort William *Herald* says that there will be received at Grand Trunk Pacific dock in Fort William this summer rails to lay 250 miles of new track. There should be more than twice that quantity received at the head of the lakes this summer, if all the track laying that is projected in the Canadian West this season is carried out. Possibly the docks of the Canadian Pacific there and those of the Canadian Northern at Port Arthur will receive as much, but the needs of the National Transcontinental alone call for more than the newspaper's advices show to be coming through the G. T. P. dock.

C. A. C. J.

President Edwin E. Bartlett of the Boston Branch, National Metal Trades Association, has appointed these committees: Entertainment, George F. Lawley, I. G. Marston, Winslow Blanchard; Finance, Fred F. Stockwell, Martin McLauthlin, John Becker; Membership, Winslow Blanchard, J. G. Blount, W. H. Phillips, J. Stark, J. W. Moore, E. P. Robinson, Fred F. Stockwell, W. J. Young, J. A. Murray; Superintendents' and Foremen's Club, H. F. Arnold, Thomas Hibbard, Frank Burgess; Labor Bureau, M. H. Barker, E. P. Robinson, Fred F. Stockwell; Legislative, E. P. Robinson, J. G. Morrison, H. I. Illingworth.

## The Foundry Exhibits at Toronto.

The work of installing the exhibits of foundry equipment and supplies for the convention of the American Foundrymen's Association at Toronto, Ont., June 8-12, is well under way. Nearly all of Machinery Hall has been reserved and the temporary building will be completely occupied. The cupola, which is being installed by J. de Clercy, of Montreal, will be in the temporary building where the brass melting furnaces and core ovens will also be found. Machinery Hall will contain molding machine exhibits by 10 or 12 different firms, and core making exhibits by two firms. Two exhibits will be made of machines for mixing and tempering sand, one of these being brought from France. The molds from the machines will be poured with metal from the cupola. The plan to run the cupola an hour or two in the morning, shutting down until afternoon, without dropping the bottom, then continuing the melting later for 2 hr., will be studied with interest by manufacturers who desire a small amount of iron at intervals throughout the day. Continuous melting and pouring would make it possible to take care of the output of the new varieties of molding machines which fill up the floors so rapidly that under the usual method of pouring all molds late in the day many must be carried a long distance from the machine to their place on the floor, or the machine must stand idle a considerable part of the time. Other melting exhibits will be the tilting crucible furnace made by the Monarch Engineering & Mfg. Company, the double chamber furnace of the Rockwell Engineering Company, the Schwartz furnace of the Hawley Down Draft Furnace Company, and the gyrating flame stationary crucible furnace of Kroeschell Bros. Company. The list of exhibits thus far arranged is as follows:

OSBORN MFG. COMPANY: Brushes and other foundry supplies. Wire brushes in operation cleaning castings.
BUFFALO FORGE COMPANY: Exhaust fan removing dust from polishing wheels.
W. W. SLY: Tumbling mills and similar equipment.
E. H. MUMFORD COMPANY: Mumford molding machines, Bonvillain-Ronceray molding machines, and a French sand mill.
HENRY F. PRIDMORE: Molding machines.
STANDARD SAND & MACHINE COMPANY: Sand mixing, handling and tempering machines.
BERKSHIRE MFG. COMPANY: Molding machines.
HAWLEY DOWN DRAFT FURNACE COMPANY: The Schwartz melting furnaces.
TABOR MFG. COMPANY: Molding machines.
HOLLAND LINSEED OIL COMPANY: Cores in process of manufacture.
J. DE CLERCY: An A. Baillot cupola in operation.
HERMAN PNEUMATIC MACHINE COMPANY: Molding machines.
MONARCH ENGINEERING & MFG. COMPANY: Oil melting furnaces.
ROCKWELL ENGINEERING COMPANY: Oil melting furnaces.
J. D. SMITH FOUNDRY SUPPLY COMPANY: Large core oven in operation.
JONES & MOORE: Electric generators furnishing direct current for use in the building.
MITCHELL-PARKS MFG. COMPANY, together with their agents, A. Buch's Sons and Ontario Wind Engine Company: Molding machines.
J. W. PAXSON COMPANY: Molding machines and general foundry equipment.
JOS. DIXON CRUCIBLE COMPANY: Crucibles.
CALUMET ENGINEERING COMPANY: Cupolas and equipment.
ARCADE MFG. COMPANY: Molding machines.
KILLING MOLDING MACHINE COMPANY: Molding machines.
DIAMOND CLAMP & FLASK COMPANY: Core machine.
FALLS RIVET & MACHINE COMPANY: Core machine.
CHICAGO PNEUMATIC TOOL COMPANY: Pneumatic chippers and other tools.
N. J. HOLDEN COMPANY: Air compressor and pneumatic tools.
KROESCHELL BROS. COMPANY: Gyrating furnaces for melting.
GREGG COMPANY: Wire straightening machinery.
INTERSTATE SAND COMPANY: Molding sand for the molding machines.

In the Process Building there will be the following:

CARBORUNDUM COMPANY: Grinding materials.
DOMINION FOUNDRY SUPPLY COMPANY: The firm's own apparatus and that of S. Obermayer Company and Whiting Foundry Equipment Company.
HILL & GRIFFITH COMPANY: Foundry supplies.
FRANCIS HYDE & CO., Montreal.
HAMILTON FACING MILL COMPANY: Reid molding machine, Wadsworth core machine, and exhibits of Ballou's White Sand Company and one or two other firms for which the Hamilton company is Canadian agent.
DETROIT TESTING LABORATORY: Its local branch, the Toronto Testing Laboratory, will make analyses of pig iron for the cupola in operation.
ROBESON PROCESS COMPANY: Core sand binder.
R. B. SEIDEL: Crucibles.
DETROIT FOUNDRY SUPPLY COMPANY: Webb molding machine.
W. W. LINDSAY & CO.: Chaplets, &c.
CLEVELAND WIRE SPRING COMPANY.
J. S. MCCORMICK COMPANY: Foundry supplies.
THE GOLDSCHMIDT THERMIT COMPANY: Thermit welding.
CANADIAN GAS POWER & LAUNCHES, Ltd.: Gas engines for driving a Crocker-Wheeler generator for furnishing current to exhibitors.
FREDERICK B. STEVENS: Foundry supplies.
BAIRD & WEST: Semet-Solvay coke.

A compressor will be installed to furnish air power for those requiring it. The running exhibits will include in addition to molding machines, a number of interesting economizing devices. Wire brushes for cleaning castings will be operated on the ground, and an exhaust fan will be used for removing the dust. The fan for the cupola will be driven by a steam turbine. Tumbling barrels will be shown in operation, together with a dust arresting system. A core room will be shown in full operation. In the Process Building several gas engines of recent design will be installed. A number of new devices will be shown for the first time in actual operation or by working models. Many of the exhibiting firms are preparing special features for the entertainment of their visitors.

It is planned to have a general registration desk at the association headquarters in the Process Building. There will also be headquarters in the same building for each of the leading local foundrymen's associations. These local headquarters will make it easier than it has been at other conventions to bring members into communication with their friends. Members of the various associations will be admitted free to all buildings by badge and ticket furnished at the registration desk. A small admission fee will be charged non-members. As at the last convention, the entertainment will be limited to members of visiting associations. The arrangement by which meetings will be held in the auditorium of the Dairy Building, located near the exhibit building, will make it possible for members to spend the entire day on the grounds, as ample facilities for securing lunch will be provided.

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The creditors of the Security Investment Company, an identified interest of the Westinghouse Electric & Mfg. Company, have organized a committee which has taken charge of the company. It is proposed to extend all notes and raise $3,000,000 through the sale of new obligations to protect the Westinghouse Electric stock now held as collateral for loans. Well secured notes are to be extended three years and of all other creditors for five years. The balance sheet of the company shows bills payable of $17,649,396. The Security Investment Company's holdings had a market value of only $12,373,882 on February 29, as compared with a book value of $25,400,927 on October 23, 1907, when receiverships were appointed for the Westinghouse Electric & Mfg. Company and Security Investment Company.

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The Tacoma Hoist & Derrick Works is a new concern that has been organized in Tacoma, Wash., for the manufacture of all sorts of hoists and cranes, but especially for turning out certain new designs and improvements in these devices. It is composed of Lynn H. Miller, known throughout the Northwest as a lumberman, and George E. Newcomb, a mechanical engineer of experience. Mr. Miller is secretary and treasurer of the new company, and occupies the same positions with the Pacific National Lumber Company. Mr. Newcomb is manager of the new concern, which has several orders for hoists and cranes, and during the year expects to build and equip a machine shop for their manufacture.

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The Swallow Falls Electric Light & Power Company, Oakland, Md., of which H. P. Tasker is general manager, has increased its capital stock to $200,000, and expects to install a hydro-electric plant near Swallow Falls, 6 miles north of Oakland, to develop from 10,000 to 15,000 hp. The plant will be located in the heart of a coal, fire clay, building stone and wood pulp region of more than 90,000 acres, all within easy access of Pittsburgh, Pa.

## OBITUARY.

DR. HERMANN WEDDING.

A cablegram announces the death of Dr. Hermann Wedding, the eminent German metallurgist. He was widely known in this country, having been one of the German commissioners at the Centennial Exhibition in 1876, and one of the distinguished foreign guests of the American iron trade in 1890.

Dr. Wedding entered the Prussian Government mining service, but soon became identified with the Berlin School of Mines, where he occupied the chair of metallurgy for many years. At that time Percy's "Metallurgy" was the great standard textbook on the metallurgy of steel. Dr. Wedding began a translation, but soon modernized and expanded it, with special reference to continental practice. When the German Patent Office was established he became its expert adviser, and continued that connection for many years. He was a voluminous and keen contributor to the proceedings of the technical societies, but was more closely identified for many years as secretary with the Verein zur Befoerderung des Gewerbfleisses in Berlin, a body whose splendid work in the whole field of technology is too little known and appreciated outside of Prussia.

He was an indefatigable worker, possessed an enormous fund of knowledge and was keen and alert to the last years of his long life. He was a kindly critic, and youthfully eager for information. The highest honors in the gift of his associates were showered upon him. He was an honorary member of the American Institute of Mining Engineers and of the Verein Deutscher Eisenhuettenleute, and was a Bessemer medalist of the Iron and Steel Institute.

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MELLEN BRAY, Newton Center, Mass., manager and principal owner of the business of the Tubular Rivet & Stud Company, Wollaston, Mass., died May 8, aged 79 years. He was a native of Turner, Maine, where his early manhood was passed in his father's carding mill and as a partner in a country store. After a few years in Montreal he went to Boston in 1863 and bought a general machine shop. Two years later he perfected a machine for producing seamless metal boxes, and then came his invention of tubular rivet and lacing studs, which developed into an important business, now operated by the Tubular Rivet & Stud Company. He was prominent in the work of the Newton Hospital, and was the donor of the Founders' Memorial Building. He leaves two sons and a daughter.

JOSEPH W. RUSSELL died suddenly May 8, at Sharon, Pa., of heart disease, aged 71 years. He was born in Philadelphia, and learned the molder's trade. He went to Mercer County in 1856 and settled in West Middlesex. Enlisting in the Tenth Pennsylvania Volunteer Regiment he served three years in the Civil War. He afterward became a member of the Legislature. For years he operated an iron foundry in West Middlesex and Hubbard, moving in 1892 to Warren, Ohio, where he and others purchased the Etna Foundry & Machine Company. Mr. Russell was president of the company at the time of his death.

ALFRED MARTIN CASTLE, president of the A. M. Castle & Co., iron and steel house, Chicago, died May 8. Though in poor health for some time, the suddenness of his death came as a shock to his friends and associates. Born in Chicago, November 11, 1863, he entered the iron and steel business at an early age, his first connection being with W. F. Mallory & Co. In 1890 he organized the firm of A. M. Castle & Co., which in 1904 was incorporated under the same title. He was a member of the Chicago Athletic Association, the Illinois Athletic Club, the South Shore Country Club and fraternal societies. He leaves a widow and one son. His parents reside in Los Angeles, Cal. A. H. Castle, his father, is vice-president of the company and manager of the recently established Los Angeles branch.

ARTHUR KOPPEL, Berlin, Germany, according to a cablegram received May 13 by the Arthur Koppel Company, 66 and 68 Broad street, New York, has died suddenly, aged 57 years. He established the firm 30 years ago, and two years ago founded the township of Koppel, 30 miles west of Pittsburgh, where the company's new American plant is located.

## PERSONAL.

Charles B. Crook of the Lidgerwood Mfg. Company, New York, sailed May 9 for the Isthmus of Panama, to be absent about four weeks.

R. de Temple, managing director, and Eugen Toennis, chief engineer, of Hartung, Kuhn & Co., manufacturers of machinery, at Düsseldorf, Germany, arrived last week on a visit to this country.

O. W. Emrich, engineer of the Republic Iron & Steel Company, Youngstown, Ohio, and O. E. Emrich, chief engineer of the Canton Works of the American Bridge Company, have sailed for Naples. They expected to go to Egypt, and later to visit the steel making districts of Germany and England.

Dr. Schuyler Skaats Wheeler, past president of the American Institute of Electrical Engineers and president of the Crocker-Wheeler Company, Ampere, N. J., addressed the Engineering Society of Columbia University May 4 on the subject of "Engineering Honor." He mentioned the three great duties of the engineer in the order of their importance: 1, The engineer's duty to his client; 2, to the public, and, 3, to his engineering society. He condemned strongly the publication of false scientific and false engineering statements in the newspapers, and declared that discoveries and inventions should be announced not in the daily papers, but through the technical societies or the technical press.

J. Sterming Eastwood, for a long time mill manager of the Thomaston plant of the Plume & Atwood Mfg. Company, Waterbury, Conn., has severed his connection with the business after 36 years of active service. S. Kellogg Plume has been appointed to succeed Mr. Eastwood.

Prof. Herman Schneider, dean of the College of Engineering, University of Cincinnati, addressed the machinery manufacturers of Fitchburg, Mass., May 7, and those of Worcester, Mass., May 8 on the co-operative engineering course as carried out at Cincinnati, the students alternating week by week in attendance at school and shop. It is proposed to establish this co-operative arrangement between the high schools and the shops in the cities named.

There are now in this country on a visit Wilhelm Altpeter and Berthold Nothmann, directors of the Oberschlesische Kokswerke und Chemische Fabriken, A. G. of Zabrze, Upper Silesia, one of the largest producers of furnace coke in Germany.

A. Tropenas, president of the Tropenas Steel Company, New Castle, Del., is now on his way to this country from abroad. He has recently taken out patents on a new converter process. The converters will have a capacity of ½ ton, and it is said that even working with this small quantity no difficulty is experienced in keeping the steel hot enough to handle in pouring light work.

J. Dix Fraser arrived from Sydney, N. S., a few days ago to take charge of the Atikokan Iron Company's blast furnace plant at Port Arthur, Ont. It is the intention of the company to resume operations as soon as possible.

W. C. Mitchell, superintendent of the Dominion Iron & Steel Company, Sidney, N. S., returned this week from a tour, lasting upward of a month, of iron and steel plants in the United States.

Samuel Groves, formerly of Pittsburgh, and in recent years connected with trade and engineering journals in Canada, has been appointed editor of the Canadian Geological Survey publications, with headquarters at Ottawa, Ontario.

Baron Yoshiro Sakatina, recently Minister of Finance of Japan; Masajiro Yokoyama, president of the Bank of Japan, two members of the firm of Mitsui & Co. of New York, together with 11 other prominent Japanese bankers and financiers, are expected to arrive in Pittsburgh, May 18, for the purpose of visiting the Homestead and Edgar

Thomson works of the Carnegie Steel Company and possibly other industrial plants in that city. The party will be guests of the Carnegie Steel Company and other steel interests.

Walter B. Snow, publicity engineer, has recently increased his facilities by removal to larger quarters at 170 Summer street, Boston, Mass., and the establishment of an addressing and mailing department in connection with which select mailing lists will be maintained for the special use of his clients.

## The A. S. M. E. Monthly Meeting.

"Clutches, With Special Reference to Automobile Clutches," was the subject of the meeting of the American Society of Mechanical Engineers, held Tuesday evening, May 12, in the Engineering Societies Building, New York. The paper, abstracted in another part of this issue, was presented by Henry Souther of the Henry Souther Engineering Corporation, Hartford, Conn., and illustrated with lantern slides. The speaker emphasized his preference for cone clutches for automobile use, if properly mounted and connected to drive through two universal joints. That the paper had interest to other than automobile builders and users was apparent in the discussion from the repeated references to clutches for machine tool applications and power transmission.

The first speaker, E. H. Gabriel of the E. W. Bliss Company, Brooklyn, N. Y., offered a supplement to rather than a discussion of the paper, which treated of clutches as applied to power presses. Lantern slides shown illustrated the Fowler type of press clutch, old and improved Stiles clutches, a Johnson clutch and an improved form of it, several types of Bliss clutches, including those for slow and for high speeds, and the Waldron friction clutch for back geared presses. Particularly interesting was a clutch attached to a special press and arranged to disengage at the bottom of the stroke.

In similar manner, E. H. Neff, New York representative of the Brown & Sharpe Mfg. Company, Providence, R. I., showed three styles of clutches used by that company, these being a friction clutch intended for slow speeds, not exceeding 900 ft. per minute; a cone friction pulley intended for higher speed, 1500 ft. per minute, and a special reversing clutch for automatic screw machines.

Friederich Müller of Buffalo, N. Y., described and showed a model of a clutch in which the load controls the friction of the expanding ring. It runs only in one direction and is suitable for variable speed transmissions. The fast and slow gears are constantly in mesh and are selectively made active without shock by manipulating the clutch, which takes effect gradually.

Frank Mossberg of the company of that name, Attleboro, Mass., added to what had already been said concerning clutches for power presses and referred particularly to what he called a positive friction clutch which is used extensively in power presses.

Facts from the experience of the Garvin Machine Company, New York, bearing on points covered in the paper were cited by E. J. McClellen of that company. It has been found that an angle of 10 degrees appears to be the proper one for cone friction clutches which are engaged by a toggle mechanism, and an angle of 6 degrees for those engaged by springs, and that for countershafts expansion ring and contracting band clutches are suitable.

The Gilbert clutch particularly adapted for heavy power transmission as in hoisting machinery and dredges was described by Mr. Bellman. This is a contracting band clutch actuated through an auxiliary cone clutch so as to pick up its load gradually and is claimed to have the advantage over a cone clutch that it has no end thrust and occupies less space, and over steam or hydraulically operated band clutches that it is not necessary to have a hole through the shaft, and is less expensive.

Mr. Gay, representing the Sturtevant Mill Company, Boston, Mass., disagreed with the author about the inability of the Sturtevant clutch to get an automobile out of a ditch. He explained that because of a peculiar centrifugal effect when used with an explosive engine, it is very well qualified to meet such emergencies.

Another point of the author's paper was disputed by B. D. Gray of the American Locomotive Company. He did not concede the superiority of the cone clutch with leather friction for automobiles, declaring instead for multiple disk clutches and particularly those having a large number of light thin disks, preferably alternately bronze and steel. He described and gave the dimensions of the special clutch he had in mind and denied that variations in temperature produce trouble in such a clutch.

From blackboard sketches H. F. J. Porter, New York, explained some of the capabilities of a hydraulic transmission device, combining the functions of a clutch and a speed variator. It operates through radial cylinder combinations of oil pumps, by the valve controlled connections between which any speed from rest to that of the driving member may be secured. The apparatus is being used quite extensively by the navy in the operation of gun lifts and turrets.

In summing up the author refused to recede from his position that cone clutches are the best, all things considered, for automobiles, and gave additional reasons in support of his opinion, from experiences of his own and that of others of which he had knowledge.

## Customs Decisions.

### The Duty on Pewter Scrap.

In sustaining a claim filed by Knauth, Nachod & Kuhne, New York, the Board of United States General Appraisers has decided that paragraph 637 of the tariff free list, relating to "pewter and britannia metal, old, and fit only to be manufactured," includes clippings or turnings of pewter, produced in the manufacture of machine bearings. The local appraiser returned the merchandise as "pewter fit only to be remanufactured, free of duty." The collector did not accept this advisory classification, but assessed duty at the rate of 20 per cent. under the provision for "metals unwrought." In sustaining the contention of the importers, General Appraiser Fischer, who writes the decision for the board, says in part:

It is conceded that the turnings or clippings are in fact of pewter. The only question in dispute is whether the waste falling off in the process of the manufacture of metal articles may be regarded as old metal. Speaking in the ordinary sense, an article is old only when, by reason of age or use, it has become useless or no longer serviceable for the purpose for which it was originally intended.

In a tariff sense, however, an article may be old although not long in existence, or actually worn out by use. This is so where the article can no longer be used for the purpose for which it was made and by reason of that fact is capable of being employed only for the purposes of remanufacture. The pewter turnings here in question are clearly fit for no other use than to be remanufactured, and having outlived their usefulness and character as manufactured articles, they should have been classified, as claimed in the protest, as old pewter.

### Swath Turners.

In overruling a protest filed by the Richardson Mfg. Company, Boston, the Board of United States General Appraisers holds that so-called swath turners are dutiable properly at the rate of 45 per cent. under the tariff provision for manufactures in chief value of metal. It was maintained by the importers that the articles should be admitted at 20 per cent. as being dutiable by similitude to horse rakes under paragraph 460, which provides for various agricultural implements. The decision, which is by General Appraiser Fischer, says in part: "The machine here in question is not provided for by name in paragraph 460, and, although the importers claim that it is similar in construction and use to a horse rake, the similitude clause cannot be applied in this case so as to bring it within that provision of the tariff. Is is a manufactured article made of metal not specially provided for, and we hold it to be properly dutiable under paragraph 193 as assessed."

The Mahoning Gas Fuel Company, Youngstown, Ohio, proposes to build a trunk line to new gas fields to cost $1,000,000, and will ask the City Council of Youngstown to allow it to increase the price of fuel gas from 27 cents to 30 cents net, per 1000 ft.

# NEWS OF THE WORKS.

### Iron and Steel.

The plant of the Kemmerer Iron & Steel Company, Scranton, Pa., will be offered at public sale June 1 by the trustee. The company, which was recently declared a bankrupt, installed the plant on the site of the old mill of the Lackawanna Steel Company.

It is expected that Hamilton Furnace, at Hanging Rock, Ohio, will be blown in within the next few days. This step is taken so that the company may get an assortment of iron on hand, though a very considerable part of the product may have to be piled.

The Hudson Wire Company, Ossinning, N. Y., has increased its capital stock from $50,000 to $125,000, all paid in, and has taken over the plant of Royle & Akin, manufacturers of fine wire of every description. Robert M. Akin is president and Joseph Royle general manager.

Rockdale Iron Company, Rockdale, Tenn., expects to change about the middle of the year from making foundry iron to the manufacture of ferrophosphorus. The company has recently sold a round lot of the latter product.

Operations have been suspended at the steel plant of the Tennessee Coal, Iron & Railroad Company at Ensley, Ala., for an indefinite period.

### General Machinery.

Slater & Marsden, Beloit, Wis., have purchased the site and building formerly owned by Davidson Brothers in South Beloit, and will occupy it for the manufacture of woodworking machinery.

The Dominion Coal Company, Glace Bay, N. S., has asked bids for the rebuilding of its washing plant, which was recently destroyed by fire.

The Knoxville Iron Company, Knoxville, Tenn., intends to build a new machine shop, 50 x 80 ft., in which will be installed the machines in the present shop. When the company built its new works it put its machine shop in one corner of the warehouse, and it is to accommodate this equipment that the new shop is to be built; the company, therefore, will require no new machinery.

The Iberia Milling & Electric Company, Iberia, Mo., has been incorporated with a capital stock of $9000, for the purpose of building and operating a roller flour mill and electric light plant. The flour mill equipment has been purchased from the Nordyke & Marmon Company, Indianapolis, Ind., and motive equipment consisting of one 87-hp. engine and one 100-hp. engine is being supplied by the Frost Mfg. Company, Galesburg, Ill. The officers of the company are C. W. Farnham, president; J. S. Casey, treasurer; Frank Topping, secretary.

The Pennsylvania Railroad intends to improve its facilities at Conway, Ohio, for handling locomotives and making track repairs for freight cars It is not the intention to build extensive shops at that point, but a roundhouse will probably be built, with coaling station and water plant and such small repair shops as are necessary in connection with the roundhouse. Extensions to the present yard tracks will be made from time to time to provide increased facilities for the more economical handling of its business. The company is not doing any work upon the project at the present time.

### Power Plant Equipment.

The Central Indiana Lighting Company, Columbus, Ind., has in contemplation improvements which include the building of a new power plant and important work in the reconstruction of its street car lines. Plans for this work, however, have not as yet been fully developed.

Bids for the installation of a heating and power plant in the new Auditorium Building, Milwaukee, Wis., will probably not be invited before July. The cost of this installation, it is estimated, will be about $10,000.

The City Council of Dresden, Ohio, has authorized a $25,000 bond issue for the construction of a water works system. Plans and specifications are now being prepared by H. E. Munson, Zanesville, Ohio.

At an election to be held on May 25 the question of a water works bond issue of $250,000 is to be submitted to the voters of Tulsa, I. T. The vote will include a proposition to ratify or reject the contract for the purchase of the present plant and to supply funds for necessary improvements.

Plans are being prepared and estimates made by the city of Harrington, Wash., for a water works plant. In the meantime catalogues from manufacturers of water works supplies are desired and may be addressed to J. J. Cameron.

At the close of 1907 one of the largest orders ever placed for mechanical stoking equipment was received by the Westinghouse Machine Company, Pittsburgh, Pa., aggregating 14,400 boiler-horsepower. This was for one of the large Brooklyn power stations operated by the Transit Development Company, New York. The order comprises 24 stokers suited to 600 hp. boilers of the Babcock & Wilcox water tube type, and is the second large order placed by this company for Roney stokers, the result of a year's successful operation of the original 7200 hp. installation at the Kent avenue station. This station was originally equipped with flat grates for hand firing.

The Village Board of Manito, Ill., has voted bonds for $3500 to complete the construction of an electric light plant which was undertaken and abandoned by a private interest. The village is now accepting bids for the completion of the plant.

The General Engine Company, recently incorporated at Buffalo, N. Y., to manufacture the Hoffman patent rotary engines, has secured the new two-story brick factory, 60 x 120 ft., at Letchworth and Grant streets, and will equip it for the manufacture of a full line of the improved rotary engines.

### Foundries.

Smith & Loughlin, foundry and pattern works, Brooklyn, N. Y., are rebuilding the part of their plant which was recently damaged by fire, and will require no new machinery. The firm uses electric power, and the damage to the motors was only slight.

The plant of the Sheffield Cast Iron Pipe & Foundry Company, at Sheffield, Ala., has been put in operation after several months' idleness.

### Bridges and Buildings.

The Nashville Bridge Company, Nashville, Tenn., has secured a contract for the erection of a bridge over Smith Fork at Temperance Hall, in DeKalb County.

Frank Wyant and Benjamin Price have been appointed receivers for the New Jersey-West Virginia Bridge Company, Manasquan, N. J.

### Fires.

The plant of the Frontier Engine Works, Buffalo, N. Y., was damaged $5000 by fire May 6.

The shops of the Chicago & Alton Railroad at Blomington, Ill., were recently damaged $25,000 by fire.

The plant of the Hotchkiss Foundry Company, Torrington, Conn., was recently burned, the loss being about $5000.

The plant of the Port Hope Electric Light & Power Company, Port Hope, Ont., was destroyed by fire May 8, the loss being about $50,000.

### Hardware.

What is said to be one of the largest orders ever placed for steel lockers has recently been secured by the Durand Steel Locker Company, Chicago, Ill. It calls for 7000 lockers to be furnished to the New York City Railway for the equipment of its elevated and suburban stations and power houses in New York City.

### Miscellaneous.

The Montpelier Iron & Metal Company, K. McClosky, manager, Montpelier, Ind., has been organized to deal in scrap iron and second-hand machinery.

The Holland Launch & Engine Works, Holland, Mich., which was organized the early part of last year, has decided to discontinue business and will dispose of its plant on West Eighth street.

The J. P. Devine Company, Buffalo, N. Y., manufacturer of vacuum drying apparatus, has leased the Seventh street factory of the B. F. Stinson Company, and is making alterations and extensions and equipping it to meet te increased requirements of its business.

The American Cyanide Company has commenced work on the large new plant which it is to erect at Niagara Falls, Ont.

The Everready Mfg. Company, Buffalo, N. Y., has been incorporated with a capital of $600,000 to manufacture fire extinguishers and fire fighting apparatus. The directors are Whitney G. Case, president of the W. A. Case & Sons Company; H. M. Poole and H. T. Voss of Buffalo. Factory premises have been leased at 40 Pearl street and will at once be equipped for the manufacture of the company's specialties.

The William H. Page Boiler Company, maker of the Allright, the Volunteer and the Monarch steam hot water boilers and radiators, has started its new factory at Meadville, Pa. The company will continue to maintain its warehouses at Norwich, Conn., as well as at Boston, to serve the Eastern trade. Its general offices are at 15 Murray street, New York.

The Garland Nut & Rivet Company, Bailey-Farrell Building, Pittsburgh, works at West Pittsburgh, Pa., will erect a new building at its plant, to be used as a galvanizing department.

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The Traffic Club of Philadelphia, the recently formed organization of local transportation and shipping interests, held its regular monthly meeting, May 12, at the Manufacturers' Club in that city. The principal speaker of the evening was Hon. J. Hampton Moore, who made an address on the subject of "The Atlantic Deeper Waterways." Dr. F. G. Moore also presented an illustrated travel lecture on Mexico and the western part of the United States. Following the meeting, which was the last regular one preceding the summer vacation, an informal luncheon was served.

## Aid for Canadian Shipbuilders Expected.

TORONTO, May 11, 1908.—It is expected that the Canadian Government will do something for the shipbuilding industry before the close of the present session of Parliament. Asked in the middle of the week as to the Government measures that were yet to be brought down, Sir Wilfrid Laurier enumerated bills that Ministers had then under consideration, and among these he mentioned one for the amending of the Customs Act. If, as is surmised, the amendments include changes affecting the shipbuilding industry, it would appear that it is only in this form that industry can expect anything at present, as in his summary of forthcoming governmental legislation no reference for a provision for a shipbuilding bounty was made. The remarks made in the Senate at about the same time by another minister, Sir Richard Cartwright, indicate that any disposition the Government may have to help the shipbuilding industry is rather in favor of taking duties off raw materials, structural forms, plates, &c., than to grant a bounty.

In the Senate the question of aiding shipbuilding was brought up on Tuesday by Senator Domville. A shipbuilding industry ought, he said, to be established in the Maritime Provinces, where in the days of wooden ships yards had flourished and the output of vessels went on increasing for years. He read a report that was made some time ago by a committee of the St. John Board of Trade, and a letter from Thomas Long, vice-president of the Collingwood Shipbuilding Company, both of which documents presented an argument for a governmental bounty. Speaking in reply for the Government, Sir Richard Cartwright, Minister of Trade and Commerce, said that the question deserved and would receive the Government's attention. It was not one, he said, that could be rashly undertaken, and the Government would have to be persuaded that the benefits hoped for would be realized. It was his opinion that the disadvantage at which Canadian shipbuilding is placed by duties on the parts involved in the fabrication of ships might very well be dealt with, though he did not wish to be understood as pledging the Government on the point.

Sir Mackenzie Bowell, on the opposition side, asked if a drawback of duty on shipbuilding parts is not now allowed. Sir Richard Cartwright answered that the law does provide for a drawback, but that customs regulations sometimes operate to prevent builders getting the benefit of it.

In what is probably to be the last session of Parliament before a general election, it would doubtless be considered good party tactics for the government to give some encouragement to the shipbuilding interests of the Maritime Provinces. The Provincial Legislature of Nova Scotia is on record as favoring the payment of a Dominion bounty on ships built in Canada. A few months ago the Provincial Government of New Brunswick was defeated at the polls. This was a serious reverse for the party that is in power in Ottawa, and points to a possible loss of seats there for the present Dominion Government. It would be in accordance with the rules of the political game as it is played in Canada if the Maritime Provinces were now humored in the matter of aid for the shipbuilding industry.

In a message delivered to the City Council last week the Mayor of Halifax urged that everything possible be done to secure the establishment of a shipbuilding industry in the harbor. C. A. C. J.

## Cast Iron Pipe Prices for Twenty Years.

The accompanying table, reproduced from the *Municipal Journal and Engineer*, New York, May 6, gives the prices paid for cast iron pipe by St. Louis, Mo., during 20 years, as compiled by Wm. H. Bryan, from data furnished by W. E. Rolfe of the St. Louis Water Department:

*Cast Iron Pipe Prices at St. Louis for 20 Years.*

| DATE OF ORDER | SIZES IN INCHES, AND QUANTITIES IN TONS | | | | | | | | | | | | Price per ton 2,000 lbs. del. at yds. | Average Prices, by Years |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3 | 4 | 6 | 8 | 10 | 12 | 15 | 20 | 30 | 36 | 42 | 48 | | |
| ——'88 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | $26.45 | $26.45 |
| 2-19-'89 | ..... | ..... | 330 | 75 | ..... | 395 | ..... | ..... | ..... | ..... | ..... | ..... | 26.33 | 26.33 |
| 4- 2-'91 | ..... | ..... | ..... | ..... | ..... | 590 | ..... | ..... | ..... | ..... | ..... | ..... | 27.84 | |
| 7-28-'91 | ..... | ..... | 125 | ..... | ..... | 515 | ..... | ..... | ..... | ..... | ..... | ..... | 26.75 | 27.11 |
| 8- 9-'91 | ..... | ..... | 1,428 | 130 | ..... | 910 | 6 | ..... | ..... | 26 | ..... | ..... | 26.75 | |
| 2-10-'92 | ..... | ..... | 35 | ..... | ..... | 55 | ..... | 1,000 | 210 | ..... | ..... | ..... | 19.47 | |
| 4-25-'92 | ..... | ..... | ..... | ..... | ..... | 60 | ..... | ..... | ..... | ..... | 65 | ..... | 24.95 | 23.85 |
| 7-30-'92 | ..... | ..... | 1,440 | 40 | ..... | 720 | ..... | ..... | ..... | ..... | ..... | ..... | 25.48 | |
| 10-19-'92 | ..... | ..... | ..... | ..... | ..... | 5 | ..... | ..... | ..... | 685 | ..... | ..... | 25.48 | |
| 9-18-'93 | 10 | 30 | 1,400 | ..... | ..... | 1,560 | ..... | 2,035 | ..... | 450 | ..... | ..... | 19.40 | 19.40 |
| 8-21-'94 | ..... | ..... | 810 | ..... | ..... | 810 | 10 | 1,780 | 3,350 | 380 | ..... | ..... | 19.94 | 19.94 |
| 4- 1-'95 | ..... | ..... | 8 | ..... | ..... | 12 | ..... | ..... | 3,307 | 1,300 | ..... | ..... | 19.85 | |
| 5-23-'95 | ..... | 8 | 787 | ..... | ..... | 55 | ..... | ..... | ..... | ..... | ..... | ..... | 20.96 | 21.09 |
| 9-20-'95 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 950 | 5,400 | ..... | ..... | ..... | 22.47 | |
| 2- 8-'96 | 25 | 75 | 1,550 | 15 | ..... | 1,200 | ..... | ..... | ..... | ..... | ..... | ..... | 24.00 | |
| 8-12-'96 | ..... | ..... | 900 | ..... | ..... | 1,450 | ..... | 350 | ..... | ..... | ..... | ..... | 19.64 | 21.19 |
| 10-12-'96 | ..... | ..... | 5 | ..... | ..... | 30 | ..... | 155 | 2,915 | 6,905 | ..... | ..... | 19.94 | |
| 6-10-'97 | ..... | ..... | 750 | ..... | 6 | 1,400 | ..... | 1,044 | ..... | ..... | ..... | ..... | 14.57 | |
| 7-12-'97 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 53 | ..... | 16.50 | 16.30 |
| 9-29-'97 | ..... | ..... | ..... | 30 | ..... | 70 | 50 | 1,200 | 100 | ..... | ..... | ..... | 17.84 | |
| 3-31-'98 | ..... | ..... | 575 | ..... | ..... | 1,500 | 15 | 1,085 | ..... | 25 | ..... | ..... | 14.97 | |
| 7-25-'98 | ..... | ..... | 600 | ..... | ..... | 1,330 | ..... | 1,405 | ..... | ..... | ..... | 15 | 14.08 | 14.52 |
| 2-20-'99 | ..... | ..... | 650 | ..... | ..... | 2,700 | ..... | 350 | 400 | ..... | ..... | ..... | 18.80 | |
| 6-16-'99 | ..... | ..... | 600 | ..... | ..... | 1,075 | ..... | 1,120 | ..... | 1,305 | ..... | ..... | 24.40 | 21.60 |
| 4-23-'00 | ..... | ..... | 1,000 | ..... | ..... | 2,600 | ..... | 2,050 | ..... | ..... | ..... | ..... | 27.49 | |
| 8-14-'00 | ..... | ..... | 12 | ..... | ..... | 28 | ..... | ..... | ..... | 5,350 | ..... | ..... | 23.84 | 25.66 |
| 5- 4-'01 | ..... | ..... | 700 | ..... | ..... | 1,620 | ..... | 2,110 | 820 | 950 | ..... | ..... | 22.93 | 22.93 |
| 3- 8-'02 | ..... | ..... | 1,145 | ..... | ..... | 1,025 | ..... | 2,345 | 2,770 | 2,015 | ..... | ..... | 25.83 | |
| 5- 1-'02 | ..... | ..... | 830 | 175 | 225 | 550 | ..... | ..... | ..... | 1,580 | ..... | ..... | 28.93 | 27.38 |
| 3-30-'03 | ..... | 15 | 1,390 | ..... | ..... | 1,190 | 30 | 1,175 | 700 | ..... | ..... | ..... | 32.25 | 32.25 |
| 6- 4-'04 | ..... | 50 | 1,140 | ..... | ..... | 860 | ..... | 1,160 | 20 | 3,200 | ..... | ..... | 24.90 | 24.90 |
| 5- 1-'05 | ..... | ..... | 1,160 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 27.45 | |
| 5- 1-'05 | ..... | ..... | ..... | ..... | ..... | 1,360 | ..... | ..... | ..... | ..... | ..... | ..... | 26.45 | 26.53 |
| 5- 1-'05 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 375 | 840 | 153 | ..... | ..... | 25.70 | |
| 1-29-'06 | ..... | ..... | 2,200 | ..... | ..... | 2,650 | ..... | 1,650 | ..... | ..... | ..... | ..... | 28.90 | |
| 9-15-'06 | ..... | ..... | 1,350 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 30.75 | 29.82 |
| 9-15-'06 | ..... | ..... | ..... | ..... | ..... | 200 | ..... | 1,050 | ..... | ..... | ..... | ..... | 29.80 | |
| 5-14-'07 | ..... | ..... | 1,430 | ..... | ..... | 1,075 | ..... | 1,460 | ..... | 2,161 | ..... | ..... | 35.00 | ..... |

During the spring of 1908 prices of $22.50 to $23 have been obtained in that section of the country on large orders.

# The Iron and Metal Trades

All semblance of co-operation among makers of Foundry Pig Iron in maintaining prices has disappeared, and many of those who have steadily refused to meet the slowly declining market are now offering Foundry at the prices which have been really ruling for some time. In isolated instances even these prices have been shaded by producers who were acting in harmony with the others. The co-operative movement had its strongest adherents in the eastern Pennsylvania and in the Buffalo districts. Naturally they had accumulated considerable Iron, but the two groups are composed of financially sturdy concerns, who may decline to participate in a wild scramble for business. The Eastern furnaces particularly are hampered by high priced old contracts for Ore and Coke. The Buffalo group are better situated in that respect. The two meet in the territory north of Albany and in New England.

The pressure of the Southern makers is on all markets. No. 2 Foundry Iron at $11.25, Birmingham, which has been done, means $15.50 delivered at tidewater points, Philadelphia and New York, and $16 in New England harbors, which is $1 per ton and more below the lowest which eastern Pennsylvania furnaces have yet been willing to go. Of course, the latter are in a better position at interior points, and the question of quality plays some part. Southern Iron in the Central West meets Valley and other furnaces on the basis of $14.50 at Valley furnace.

The situation then is that there have entered the market a number of sellers who have the disposition to meet it. Just how far they must go, or are willing to go, is the question on the one side, while buyers must decide what price seems safe to them to contract for at least a part of their requirements for the third and fourth quarters. Some sellers do name prices for the latter delivery, but they are anywhere from 50 cents to $1 higher than those at which they are willing to book third quarter business.

There is one feature of the situation which should be frankly referred to, and that is the fact that a powerful interest made the proposal some weeks ago to clear the situation by an open drop to $10.50, at Birmingham, for No. 2 Foundry. That proposal, seriously made at the time, has been kept in mind by the trade and has raised the expectation that that figure represents the true, safe bottom. The impression at the time, however, was that it was a threat rather than the announcement of a future selling policy.

There has been a good deal more of interest among buyers during the past few days, and both makers and melters are feeling the market. Actual transactions are being closely guarded, but there are indications that they are more numerous and important than appears on the surface.

The finished trade on the whole is rather dull. Buyers are holding back to some extent in the hope that a readjustment of prices may soon be made, it being known that many of the active selling forces are no longer in sympathy with the policy of maintaining prices. In some instances, however, work which had been held back for months has been finally placed.

There has been some Rail business, the Lackawanna Steel Company having accepted 6000 tons from the Maine Central, 8000 tons from the Boston & Albany and 6000 tons from the Michigan Central. Thus far there has been put on the books of the Rail mills a total of 1,500,000 tons, including the orders carried over from last year.

The contract for the material for the La Salle Hotel at Chicago, a little over 8000 tons, has been finally placed with the American Bridge Company, after a long delay. Among the work being figured on are 5000 tons for the Lackawanna shops at Scranton, 4200 tons for a bridge over the Chicago drainage canal and 2000 tons for a Court House at Duluth.

Among the lighter lines Tin Plate still is the banner industry. Iron Bars are again demoralized in the East. The Wire industry has passed over the crest of its spring trade activity.

The largest contract placed for Cast Iron Pipe for some time is for 10,000 tons for Syracuse, secured by the United States Cast Iron Pipe & Foundry Company.

The export trade is enjoying a fair degree of prosperity and the outlook is more promising, since quite a number of undertakings throughout the world are rapidly progressing in the preliminary financing. Shipping orders were received lately on the 100,000 ton order for Sheet Bars, taken last year for delivery during the first half of this year. Some time since shipments were stopped.

## A Comparison of Prices.

**Advances Over the Previous Month in Heavy Type, Declines in Italics.**

At date, one week, one month and one year previous.

| | May 13, 1908. | May 6, 1908. | Apr. 8, 1908. | May 8, 1907. |
|---|---|---|---|---|
| **PIG IRON,** Per Gross Ton: | | | | |
| Foundry No. 2, Standard, Philadelphia | *$16.75* | $17.50 | $17.75 | $25.50 |
| Foundry No. 2, Southern, Cincinnati | *14.75* | 14.75 | 15.25 | 24.25 |
| Foundry No. 2, Local, Chicago | *17.25* | 17.35 | 17.35 | 26.50 |
| Bessemer, Pittsburgh | *16.90* | 17.00 | 17.65 | 23.85 |
| Gray Forge, Pittsburgh | *14.90* | 14.90 | 15.40 | 22.35 |
| Lake Superior Charcoal, Chicago | *20.00* | 20.00 | 20.50 | 27.50 |
| **BILLETS, &c.,** Per Gross Ton: | | | | |
| Bessemer Billets, Pittsburgh | 28.00 | 28.00 | 28.00 | 30.50 |
| Forging Billets, Pittsburgh | *29.00* | 29.00 | 30.00 | .... |
| Open Hearth Billets, Phila | 29.20 | 29.20 | 29.20 | 32.50 |
| Wire Rods, Pittsburgh | 35.00 | 35.00 | 35.00 | 37.00 |
| Steel Rails, Heavy, Eastern Mill | 28.00 | 28.00 | 28.00 | 28.00 |
| **OLD MATERIAL,** Per Gross Ton: | | | | |
| Steel Rails, Melting, Chicago | 12.00 | 12.00 | 12.00 | 18.00 |
| Steel Rails, Melting, Phila | 12.75 | 12.75 | 12.75 | 19.50 |
| Iron Rails, Chicago | *14.75* | 14.75 | 15.00 | 24.50 |
| Iron Rails, Philadelphia | 17.00 | 17.00 | 17.00 | 27.25 |
| Car Wheels, Chicago | *13.00* | 12.50 | 14.00 | 25.00 |
| Car Wheels, Philadelphia | 14.00 | 14.00 | 14.00 | 24.00 |
| Heavy Steel Scrap, Pittsburgh | 12.75 | 12.75 | 12.75 | 18.00 |
| Heavy Steel Scrap, Chicago | *10.50* | 10.50 | 11.25 | 15.50 |
| Heavy Steel Scrap, Philadelphia | 12.75 | 12.75 | 12.75 | 19.00 |
| **FINISHED IRON AND STEEL,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Refined Iron Bars, Philadelphia | *1.46* | 1.46 | 1.65 | 1.83½ |
| Common Iron Bars, Chicago | 1.65 | 1.65 | 1.65 | 1.76½ |
| Common Iron Bars, Pittsburgh | 1.50 | 1.50 | 1.50 | 1.80 |
| Steel Bars, Tidewater, New York | 1.76 | 1.76 | 1.76 | 1.84½ |
| Steel Bars, Pittsburgh | 1.60 | 1.60 | 1.60 | 1.60 |
| Tank Plates, Tidewater, New York | 1.86 | 1.86 | 1.86 | 1.84½ |
| Tank Plates, Pittsburgh | 1.70 | 1.70 | 1.70 | 1.70 |
| Beams, Tidewater, New York | 1.86 | 1.86 | 1.86 | 1.84½ |
| Beams, Pittsburgh | 1.70 | 1.70 | 1.70 | 1.70 |
| Angles, Tidewater, New York | 1.86 | 1.86 | 1.86 | 1.84½ |
| Angles, Pittsburgh | 1.70 | 1.70 | 1.70 | 1.70 |
| Skelp, Grooved Steel, Pittsburgh | *1.55* | 1.55 | 1.70 | 1.85 |
| Skelp, Sheared Steel, Pittsburgh | *1.65* | 1.65 | 1.80 | 1.90 |
| **SHEETS, NAILS AND WIRE,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Sheets, No. 27, Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| Wire Nails, Pittsburgh | 2.05 | 2.05 | 2.05 | 2.00 |
| Cut Nails, Pittsburgh | 1.90 | 1.90 | 1.90 | 2.05 |
| Barb Wire, Galv., Pittsburgh | 2.50 | 2.50 | 2.50 | 2.45 |
| **METALS,** Per Pound: | Cents. | Cents. | Cents. | Cents. |
| Lake Copper, New York | *12.75* | 12.87½ | 13.12½ | 24.87½ |
| Electrolytic Copper, New York | *12.62½* | 12.62½ | 12.87½ | 24.25 |
| Spelter, New York | *4.60* | 4.65 | 4.70 | 6.55 |
| Spelter, St. Louis | *4.50* | 4.50 | 5.52½ | 6.40 |
| Lead, New York | **4.25** | 4.20 | 4.00 | 6.00 |
| Lead, St. Louis | **4.12½** | 4.10 | 3.85 | 5.92½ |
| Tin, New York | *29.50* | 31.05 | 31.75 | 42.25 |
| Antimony, Hallett, New York | *8.50* | 8.50 | 8.75 | 20.50 |
| Nickel, New York | 45.00 | 45.00 | 45.00 | 45.00 |
| Tin Plate, 100 lb., New York | $3.89 | $3.89 | $3.89 | $4.09 |

## Chicago.

FISHER BUILDING, May 13, 1908.—(*By Telegraph.*)

Buyers are beginning to manifest a lively interest in Pig Iron, and are closely watching developments. As long as the market continues to sag they hesitate to cover for forward requirements, but many are becoming convinced that prices are nearing the line of production cost, which can be counted on to arrest the downward movement. This feeling is doubtless responsible for a number of new inquiries for considerable tonnage now in the market, but most of them are put out in the hope of securing offers somewhere near $10, Birmingham. While there are rumors of $11 having been done they are without confirmation, no price better than $11.50 on strictly No. 2 Foundry having up to this time been authentically established. It is evident that offers by the furnaces of anything below $11 would bring out some round tonnage business in Foundry Iron. The Structural Material contract for the new La Salle Hotel, amounting to about 7000 tons, which has been pending for several months, has just been awarded to the American Bridge Company. No other lots of important tonnage were entered by fabricators during the week, but bids are in on a number of bridge jobs, some of which will doubtless be closed in a few days, the aggregate of which is over 8000 tons. There was added to the Rail bookings of the mills in specifications and new business since last report a total of 7000 tons, of which 4500 tons of Standard Section Rails went to the Illinois Steel Company, and 1500 tons of high T Traction Rails going to the Pennsylvania Steel Company. The latter lot was purchased by the Milwaukee Electric Light & Railway Company.

There is little demand for Plates, but the Sheared Plate mill at the South Works was started up on Monday of this week at moderate capacity, and the Structural mill discontinued operation at the same time. Two lettings of Cast Iron Pipe advertised by the cities of Detroit, Mich., and Dayton, Ohio, aggregate 7000 tons, in addition to which there are a fair number of small lots coming up. Trade in Old Material is confined almost wholly to dealers, and though no material recession in prices is noted the market is essentially weak.

**Pig Iron.**—From the viewpoint of actual transactions last week's market was extremely quiet. Aside from the purchase of 2000 tons by the American Steel Foundries of Low Phosphorus Iron, no lots of considerable tonnage have changed hands. The purchase of 2000 tons of Malleable Iron made two weeks ago by a large local consumer has since been augmented by a purchase of 500 tons. Notwithstanding the meagerness of sales, it is quite evident that the present Pig Iron situation is awakening an active interest among consumers which may culminate in a buying movement at any time. Buyers are constantly testing the market with a view to developing a $10, Birmingham, price, but so far without success. The events of the past few weeks have fostered the belief that this price would eventually be reached, and it has been generally looked upon as the limit of the downward trend of values; but in spite of attractive tonnage offers at this price producers have shown no disposition to negotiate. Under the pressure that has been brought to bear the market has, however, weakened, and $11.50, Birmingham, for No. 2 Foundry, is now the general accepted price level. A prominent consumer was in the market last week with an offer to buy 4000 tons of No. 3 on a basis of $10.25, Birmingham, which as far as can be ascertained found no takers. An inquiry for 5000 to 10,000 tons of Basic Iron for a St. Louis Steel foundry plant is in the market, but it is regarded as unlikely that either the whole or a very considerable part of this tonnage will be placed immediately unless an exceptionally favorable price is offered. The impression that the market is now not far from bottom seems to be gaining ground, and as soon as buyers are convinced that no further reduction of a sensational nature can reasonably be expected there will undoubtedly be considerable tonnage placed. The following prices are for May and June delivery, f.o.b. Chicago:

| | |
|---|---|
| Lake Superior Charcoal | $20.00 to $20.50 |
| Northern Coke Foundry, No. 1 | 17.75 to 18.25 |
| Northern Coke Foundry, No. 2 | 17.25 to 17.75 |
| Northern Coke Foundry, No. 3 | 16.75 to 17.25 |
| Northern Scotch, No. 1 | 18.25 to 18.75 |
| Southern Coke, No. 1 | 16.35 to 16.85 |
| Southern Coke ,No. 2 | 15.85 to 16.35 |
| Southern Coke, No. 3 | 15.35 to 15.85 |
| Southern Coke, No. 4 | 14.85 to 15.35 |
| Southern Coke, No. 1 Soft | 16.35 to 16.85 |
| Southern Coke, No. 2 Soft | 15.85 to 16.35 |
| Southern Gray Forge | 13.85 to 14.35 |
| Southern Mottled | 13.60 to 14.10 |
| Malleable Bessemer | 17.25 to 17.75 |
| Standard Bessemer | 19.50 to 19.65 |
| Jackson Co. and Kentucky Silvery, 6 % | 18.90 to 19.40 |
| Jackson Co. and Kentucky Silvery, 8 % | 20.90 to 21.40 |
| Jackson Co. and Kentucky Silvery, 10 % | 22.90 to 23.40 |

(*By Mail.*)

**Billets and Rods.**—There is practically no movement in Billets of any kind. Even the small orders in Rolling Billets, which for several months have constituted the full measure of transactions, are extremely scarce. Forging Shops are buying nothing save what is actually required for current engagements, and these are largely taken care of by stocks in hand. Prices on Forging Billets are unchanged, at $31.50 to $32.50, Chicago, and in face of the scant demand their maintenance at this figure is not questioned. Very little new business in Wire Rods is coming out and specifications against contracts are only fair. Prices continue firm and unchanged, as follows: Bessemer, $35; Basic, $36; Chain, $37; all at Pittsburgh.

**Rails and Track Supplies.**—The 1000 tons of Standard Rails, for which the Chicago, Indianapolis & Louisville Railway was stated in last report to be in the market has been placed with the Illinois Steel Company, and in addition thereto orders for about 500 tons from various sources have been entered. An order of 1500 tons of high T Open Hearth Traction Rails was taken by the Pennsylvania Steel Company, for which a premium of $2 a ton was secured. While there are no immediate prospects of large tonnage to be placed by any of the important systems considerable additions to purchases already made are looked for later in the year. A more encouraging feature is found in the fact that some specifications against suspended contracts are beginning to come in. An aggregate of about 4000 tons of such business has been entered during the week, and will probably be followed by further orders of like character. Orders for Track Supplies are coming out fairly well, and the Spike mills at Joliet are being operated at about 90 per cent. capacity. The situation as to Light Rails continues unchanged as to price; concessions of $4 to $5 a ton are still being made from regular quotations. We quote as follows: Angle Bars, accompanying Rail orders, 1908 delivery, 1.50c.; car lots, 1.60c. to 1.70c.; Spikes, 1.80c. to 1.90c., according to delivery; Track Bolts, 2.25c. to 2.35c., base, Square Nuts, and 2.40c. to 2.50c., base, Hexagon Nuts. The store prices on Track Supplies range from 0.15c. to 0.20c. above mill prices. Light Rails, 25 to 45 lb., $28; 20-lb., $29; 16-lb., $30; 12-lb., $31. Standard Sections, $28, f.o.b. mill, full freight to destination.

**Structural Material.**—While no contracts of notable tonnage are reported for the week, several lots of considerable size are in prospect, some of which will doubtless be placed within a few days. Among these are several bridges, which include 1350 tons for the Illinois Central Railway; 200 tons from the Chicago, Burlington & Quincy, bids on which went in on May 7; 4200 tons for the reconstruction and conversion of a bridge over the Chicago Drainage Canal into a Scherzer rolling lift bridge, contract for which is scheduled to be let on May 27, and 400 tons of bridge material for which the Chicago, Indianapolis & Louisville Railway is in the market. The general contract for the Tacoma Post Office, including 528 tons of Structural Shapes, was secured by W. H. Maxwell. Bids are being taken on the St. Louis County Court House, Duluth, Minn., comprising 2000 tons, which will probably be awarded on May 12. Prices from store are quoted without change, at 2.05c. to 2.10c., and mill prices at Chicago are as follows: Beams and Channels, 3 to 15 in., inclusive, 1.88c.; Angles, 3 to 6 in., ¼-in. and heavier, 1.88c.; larger than 6 in. on one or both legs, 1.98c.; Beams, larger than 15 in., 1.98c.; Zees, 3 in. and over, 1.88c.; Tees, 3 in. and over, 1.93c., in addition to the usual extras.

**Plates.**—After a shutdown of several weeks during which time enough orders have accumulated to justify starting up, the Sheared Plate mill at the South Works began rolling Monday. The tonnage in hand is, however, not large enough to insure indefinite operation. With no new car building in sight and only a small part of the boiler and tank shop capacity engaged, there is little prospect of much new business of considerable tonnage in the near future. With the exception of some cutting to the extent of $2 to $3 a ton by mills making a limited range of sizes it is reported regular prices are being maintained. We quote mill shipments, as follows: Tank Plates, ¼-in. and heavier, wider than 6¼ and up to 100 in. wide, inclusive, car lots, Chicago, 1.88c. to 2.08c.; 3-16 in., 1.98c. to 2.18c.; Nos. 7 and 8 gauge, 2.03c. to 2.23c.; No. 9, 2.13c. to 2.33c.; Flange quality, in widths up to 100 in., 1.98c. to 2.08c., base, for ¼-in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.98c. to 2.18c.; Flange quality, 2.08c. Store prices on Plates are as follows: Tank Plates, ¼-in. and heavier, up to 72 in. wide, 2.10c. to 2.20c.; from 72 to 96 in. wide, 2.20c. to 2.30c.; 3-16 in. up to 60 in. wide, 2.20c. to 2.35c.; 72-in. wide, 2.40c. to 2.50c.; No. 8 up to 60 in. wide, 2.20c. to 2.25c.; Flange and Head quality, 0.25c. extra.

**Sheets.**—The demand for Sheets has for some time been relatively better than most other products, but has waned somewhat recently. Both jobbers and consumers are ordering frequently, but only in small lots required to maintain fair stock assortments or for actual shop requirements. Whatever irregularity there is in prices seems to be limited to a few small mills, so that in the main regular prices prevail. We quote mill shipments as follows, Chicago: Blue Annealed, No. 10, 1.98c.; No. 12, 2.05c.; No. 14, 2.08c.; No. 16, 2.18c.; Box Annealed, Nos. 17 to 21, 2.43c.; Nos. 22 to 24, 2.48c.; Nos. 25 and 26, 2.53c.; No. 27, 2.58c.; No. 28, 2.68c.; No. 29, 2.78c.; No. 30, 2.88.c; Galvanized Sheets, Nos. 10 to 14, 2.63c.; Nos. 15 and 16, 2.83c.; Nos. 17 to 21, 2.98c.; Nos. 22 to 24, 3.13c.; Nos. 25 and 26, 3.33c.; No. 27, 3.53c.; No. 28, 3.73c.; No. 30, 4.23c.; Black Sheets from store: Blue Annealed, No. 10, 2.20c.; No. 12, 2.25c.; No. 14, 2.30c.; No. 16, 2.40c.; Box Annealed, Nos. 18 to 21, 2.60c.; Nos. 22 to 24, 2.65c.; No. 26, 2.70c.; No. 27, 2.75c.; No. 28, 2.85c.; No. 30, 3.25c.; Galvanized from store: Nos. 10 to 16, 3c.; Nos. 18 to 20, 3.15c.; Nos. 22 to 24, 3.30c.; No. 26, 3.50c.; No. 27, 3.70c.; No. 28, 3.90c.; No. 30, 4.40c. to 4.45c.

**Bars.**—The volume of business in Bars, both Steel and Iron, shows no increase, and specifications and new orders coming to the mills in this district are sufficient to permit their operation only one or two weeks each month. Bar Iron, however, holds a slight lead over Steel, specifications for which are furnished a little more freely. Buyers of both are unwilling to purchase for forward requirements, and are closely restricting their orders to actual needs. While principal producers are reported to be still maintaining prices pretty evenly, some of the mills are taking business at concessions from the regular price. Quotations, Chicago, are as follows: Steel Bars, 1.78c., with half extras; Iron Bars, 1.65c.; Hoops, 2.18c., extras as per Hoop card; Bands, 1.78c., as per Bar card, half extras; Soft Steel Angles and Shapes, 1.88c., half extras. Store prices are as follows: Bar Iron, 2.10c. to 2.25c.; Steel Bars, 2c. to 2.10c.; Steel Bands, 2c., as per Bar card, half extras; Soft Steel Hoops, 2.35c. to 2.45c., full extras.

**Merchant Pipe.**—The nature of orders received from jobbers indicate that they are not anticipating future business by increasing stocks, but are only sorting up on broken sizes. No large orders are being placed, the largest buyers being content to order in carload lots. This policy is seemingly dictated, not only by the quiet condition of trade, but

also by the feeling that prices may be lower in the future. No deviation is being made from present prices. The following mill discounts are quoted: Black Pipe, ¾ to 6 in., 71.2; 7 to 12 in., 68.2; Galvanized, ¾ to 6 in., 61.2. These discounts are subject to one point on the base. From store, in small lots, Chicago jobbers quote 71 per cent. on Black Steel Pipe, ¾ to 6 in. From two to three points above these prices is asked for Iron Pipe.

**Boiler Tubes.**—No developments of significant interest are reported in the market, though the past week seems to have brought out a slightly better demand from jobbers, who are buying only what is needed to keep up stocks. A scattering run of small orders is all that is doing in Locomotive Tubes. Mill quotations for future delivery, on the base sizes, are as follows: 2⅜ to 5 in., in carload lots, Steel Tubes, 63.2; Iron, 50.2; Seamless, 49.2; 2½ in. and smaller, and lengths over 18 ft., and 2½ in. and larger, and lengths over 22 ft., 10 per cent. extra. Store prices are as follows:

| | Steel. | Iron. | Seamless. |
|---|---|---|---|
| 1 to 1½ in | 35 | 35 | 35 |
| 1¾ to 2¼ in | 50 | 35 | 35 |
| 2½ in | 52½ | 35 | 35 |
| 2¾ to 5 in | 60 | 47½ | 47½ |
| 6 in. and larger | 50 | 35 | .. |

**Merchant Steel.**—Orders for Tire sizes from the carriage and wagon builders were offered a little more freely last week, but the demand for miscellaneous shapes and special grades shows no improvement. Nothing of importance is looked for in these lines until the agricultural interests are ready to negotiate for their coming season's requirements. Quotations are as follows: Planished or Smooth Finished Tire Steel, 1.98c.; Iron Finish up to 1½ x ½ in., 1.93c., base, Steel card; Iron Finish, 1½ x ½ in. and larger, 1.78c., base, Tire card; Channels for solid Rubber Tires, ¾ to 1 in., 2.28c., and 1⅛ in. and larger, 2.18c.; Smooth Finished Machinery Steel, 2.18c.; Flat Sleigh Shoe, 1.93c.; Concave and Convex Sleigh Shoe, 2.08c.; Cutter Shoe, 2.46½c.; Toe Calk Steel, 2.33c.; Railroad Spring, 1.98c.; Crucible Tool Steel, 7¼c. to 8c., and still higher prices are asked on special grades. Shafting, 56 per cent. off in car lots; 52 per cent. in less than car lots, base territory delivery.

**Cast Iron Pipe.**—The city of Detroit, Mich., is preparing to purchase 6500 tons, a letting of which will be held in the near future. The city of Dayton, Ohio, is also in the market for 500 tons. Besides these there are a number of small municipal contracts pending and in prospect, the aggregate of which will amount to a fair tonnage. There is some improvement in small lot inquiries, though altogether the tonnage coming out is far below foundry capacities, and so far as prices are concerned the market is an open one. It is naturally the opinion of those conversant with the trade that a more settled condition of the Pig Iron market would tend to greater stability in Cast Iron Pipe. We quote, nominally, per net ton, Chicago, as follows: Water Pipe, 4-in., $27; 6 to 12 in., $26; 16-in. and up, $25; with $1 extra for Gas Pipe.

**Metals.**—Although there is no appreciable improvement in demand, and buyers show no disposition to depart from the existing policy of hand to mouth buying, prices have not been adversely affected. Such small lots of Copper as are being taken by consumers command prices closely within the range of current quotations. A fractional advance on Lead is noted, but it is unaccompanied by any marked improvement in demand. Old Metals are dull and unchanged. We quote as follows: Casting Copper, 13¼c.; Lake, 13⅜c. to 14c., in car lots for prompt shipment; small lots, ¼c. to ⅜c. higher; Pig Tin, car lots, 32½c.; small lots, 33½c.; Lead, Desilverized, 4.35c. to 4.50c., for 50-ton lots; Corroding, 5.35c. to 5.45c., for 50-ton lots; in car lots, 2¼c. per 100 lb. higher; Spelter, 5c.; Cookson's Antimony, 10½c., and other grades, 9¾c. to 10¼c.; Sheet Zinc is $7 list, f.o.b. La Salle, in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 12¾c.; Heavy Copper, 12¾c.; Copper Bottoms, 10½c.; Copper Clips, 11c.; Red Brass, 11½c.; Yellow Brass, 9¾c.; Light Brass, 6½c.; Lead Pipe, 4c.; Zinc, 3¾c.; Pewter, No. 1, 21c.; Tin Foil, 25c.; Block Tin Pipe, 27c.

**Old Material.**—Practically all of the large railroad tonnage offered last week was taken by dealers, very little, if any, of it going to consumers. Neither the rolling mills nor melters are actively in the market, and no sales of significant tonnage to those interests are heard of. Continued buying by dealers under the present sluggish demand from consumers means accumulation of stocks, and there is a limit to their capacity to absorb offerings in the absence of an outward movement. Under the circumstances, therefore, the prospect for development of a firmer price situation in the immediate future is not particularly encouraging. It was erroneously stated in last week's report that the Chicago, Rock Island & Pacific sold 3400 car wheels at $12.50 gross ton; the sale in question was made as stated, but the price was $13 gross ton. The flurry on Rerolling Rails that has for several weeks held them correspondingly higher than other grades, has about spent its force. There are two railroad lists to be offered this week—one by the Chicago, Milwaukee & St. Paul, 3000 tons, and the other by the Southern Railway, 3300 tons; the former includes 250 tons of Iron and 400 tons of Steel Rails, and the latter 740 tons of Steel Rails and 400 Car Wheels. We quote, per gross ton, f.o.b. Chicago, as follows:

| | |
|---|---|
| Old Iron Rails | $14.75 to $15.25 |
| Old Steel Rails, rerolling | 13.00 to 13.50 |
| Old Steel Rails, less than 3 ft | 12.00 to 12.50 |
| Relaying Rails, standard sections, subject to inspection | 20.50 to 21.50 |
| Old Car Wheels | 13.00 to 13.50 |
| Heavy Melting Steel Scrap | 10.50 to 11.00 |
| Frogs, Switches and Guards, cut apart | 11.50 to 12.00 |
| Mixed Steel | 8.50 to 9.00 |

The following quotations are per net ton:

| | |
|---|---|
| Iron Fish Plates | $12.75 to $13.25 |
| Iron Car Axles | 15.75 to 16.25 |
| Steel Car Axles | 14.50 to 15.00 |
| No. 1 Railroad Wrought | 10.75 to 11.25 |
| No. 2 Railroad Wrought | 9.75 to 10.25 |
| Railway Springs | 10.75 to 11.25 |
| Locomotive Tires, smooth | 12.50 to 13.00 |
| No. 1 Dealers' Forge | 9.00 to 9.50 |
| Mixed Busheling | 7.00 to 7.50 |
| Iron Axle Turnings | 5.50 to 6.00 |
| Soft Steel Axle Turnings | 5.50 to 6.00 |
| Machine Shop Turnings | 5.00 to 5.50 |
| Cast Borings | 4.00 to 4.50 |
| Mixed Borings, &c | 4.00 to 4.50 |
| No. 1 Mill | 6.50 to 7.00 |
| No. 2 Mill | 5.50 to 6.00 |
| No. 1 Boilers, cut to Shreets and Rings | 6.75 to 7.25 |
| No. 1 Cast Scrap | 11.50 to 12.00 |
| Stove Plate and Light Cast Scrap | 10.00 to 10.50 |
| Railroad Malleable | 9.75 to 10.25 |
| Agricultural Malleable | 9.25 to 10.25 |
| Pipes and Flues | 7.50 to 8.00 |

## Cincinnati.

CINCINNATI, OHIO, May 13, 1908.—(*By Telegraph.*)

There is a very unsettled feeling among Iron factors and manufacturers upon whom they depend in this market because of the many and conflicting statements published concerning the prices of Iron. While the rumored drop to a $10, Birmingham, basis for No. 2, is as far distant at this writing as a week ago prior to the New York meeting, there still exists the fear among buyers that some isolated interest in the South may, now that all restrictions are removed, unload a limited stock at a material concession, which would attract those in immediate need into the market in large numbers, and the price under the pressure of limited supply would be forced up abnormally all round. While stores and small dealers generally here are maintaining the published schedules on Finished Material, it is generally believed that the latter part of the month will see important reductions. Reports coming into the Cincinnati office of *The Iron Age* from manufacturers in central territory indicate a better feeling among makers of special machinery and patented specialties with the tool manufacturers about holding their own.

**Pig Iron.**—There is admittedly much feeling of the market on prices for future deliveries, particularly beyond the third quarter. A late inquiry from northern Ohio, coming from a heating and ventilating plant, for 2000 tons for the last half will be quoted on by several furnaces, and it is practically admitted that $12 may be done, although some interests will not quote at all, feeling that it lacks sincerity. Among the larger local interests the feeling is bullish, and the prediction is made that prices will on July 1 be from 50c. to $1 a ton higher. Not all Southern furnaces will meet the $11.50 price on No. 2, but enough of them have done so to take care of all inquiries out at the present time, and one in Alabama is said to have shaded this price a trifle. There is little doing in the Ohio field, the recent aggressiveness of the Valley producers, coupled with price reductions in the South which the Hanging Rock District could not possibly meet except at a loss, having put the producers in that district practically out of the running for the present. A visitor in this market to-day, at the head of one of the largest Iron interests in the Ohio field, intimated that in the face of the action of the Ore people and the present unsettled conditions in prices, the few furnaces remaining in blast would be promptly put out on signs of further cutting. An incident of interest among the Iron dealers is the inquiry from a northern Ohio Pipe maker who asks prices weekly for his needs of 1200 tons, divided into 400 tons each of Nos. 2, 3 and 4 Foundry. Figures are made up on Monday and sent him each week. It is understood that the Valley producers have filled the requirements up to the present time on a price of about $15.40, delivered, which would beat the Southern price of $11.50 just 45c. a ton. It is understood that the inquiry from the car manufacturing concern for Detroit delivery, 3000 tons, is still open. An inquiry of to-day is from an interior Ohio concern for 100 tons of Malleable for prompt shipment. A price of about $16, Valley furnace, will be made for this requirement. Jackson County Silvery 8 per cent. is still quoted at $18.50, at furnace. A sale of 50 tons of 6 per cent. was made at $17.50. Low grades still seem to lead in demand, and prices are firm, at $10.50, at furnace, on Forge, and $10 on Mottled. For early delivery and extending into third quarter, we quote f.o.b. Cincinnati,

freight rates being $3.25 from the Birmingham, and $1.20 from the Hanging Rock District, as follows:

| | |
|---|---|
| Southern Coke, No. 1 | $15.25 to $15.75 |
| Southern Coke, No. 2 | 14.75 to 15.25 |
| Southern Coke, No. 3 | 14.25 to 14.75 |
| Southern Coke, No. 4 | 13.75 to 14.25 |
| Southern Coke, No. 1 Soft | 15.25 to 15.75 |
| Southern Coke, No. 2 Soft | 14.75 to 15.25 |
| Southern Coke, Gray Forge | 13.50 to 14.00 |
| Southern Coke, Mottled | 13.00 to 13.50 |
| Ohio Silvery, 8 per cent. Silicon | 19.70 |
| Lake Superior Coke, No. 1 | 16.70 to 17.20 |
| Lake Superior Coke, No. 2 | 16.20 to 16.70 |
| Lake Superior Coke, No. 3 | 15.70 to 16.20 |
| Standard Southern Car Wheel | 22.25 to 22.75 |
| Lake Superior Car Wheel | 22.00 to 22.50 |

(*By Mail.*)

**Coke.**—Reports of decreased production continue to circulate in this market, with the same diminution of interest on the part of consumers. There is nothing heard of furnace business, although it is reported through one of the large selling agencies that an operator reported last week a contract from the ovens for 125,000 tons of Furnace Coke extending through the year. For spot shipment the statement is made that an offer of tonnage would bring out a very attractive price. Connellsville Foundry is quoted at $2 to $2.25 for spot delivery and $2.15 to $2.40 on contract; Virginia grades on contract about $2.25; for spot shipment, $2; New River Foundry $2.65 to $3, all at oven. A shipment of last week through this market was made up of 35 cars at a price of $3.

**Finished Iron and Steel.**—Dealers report the slightest perceptible increase in sales and inquiries over last month at the same time, and manage to extract some encouragement therefrom in anticipating the future. Where everything was in small lots and a carload was almost unheard of, there are some materials moving in carloads now, notably Structural Shapes, Boiler Tubes, Plates, &c. Dealers are given to understand, however, that the agitation which has been going on for some time in the matter of lower prices promised is having a strong deterrent effect on sales, and that buyers are holding off for these anticipated better prices. Mill prices on Boiler Tubes in this market are as follows: 1¾ to 2¼ in., 57.50, with 5 off; 2½ in., 59.50, with 5 off; 2¾ to 5 in., 63.50, with 5 off, all in carload lots and f.o.b. Cincinnati. For stock shipment the prices are 1¾ in. at 54; 2½ in. at 56, and 2¾ in. at 62. Orders from stock are filled by dealers at the following prices, which are f.o.b. Cincinnati: Iron Bars, carload lots, 1.65c., base, with half extras; small lots from store, 1.85c., base, half extras. Steel Plates, carload lots, 1.75c., base, half extras; small lots from store, 1.85c., base, half extras. Base Angles, carload lots, 1.85c., base; small lots from store, 2.10c. Beams, Channels and Structural Angles, 1.85c., base; small lots from store, 2.10c. Plates, ¼-in. and heavier, carload lots, 1.85c.; small lots from store, 2c. Blue Annealed Sheets (Heavy, No. 16, carload lots, 2.15c.; small lots from store, 2.50c. No. 14, carload lots, 2.05c.; small lots from store, 2.40c. No. 10 and heavier, carload lots, 1.95c.; small lots from store, 2.20c. No. 12, carload lots, 2c.; small lots from store, 2.30c. Sheets (Light), Black, No. 28, carload lots, 2.65c. Galvanized Sheets, No. 28, carload lots, 3.70c. Steel Tire, 4-in. and heavier, carload lots, 1.95c. Plates, 3-16 and No. 8, carload lots, 2c.; small lots from store, 2.20c.

**Old Material.**—There is a little better inquiry for certain lines of Scrap, and for the first time for many months dealers are beginning to feel a little encouraged. There have been some fairly good sales during the week of Heavy Melting Steel Scrap and some Relayers. Dealers are still buying, but there is comparatively little trading between and among dealers here. Quotations are about as follows, prices being f.o.b. Cincinnati:

| | |
|---|---|
| No. 1 Railroad Wrought, net ton | $10.50 to $11.50 |
| Cast Borings, net ton | 4.00 to 5.00 |
| Heavy Melting Steel Scrap | 11.50 to 12.50 |
| Steel Turnings, net ton | 5.00 to 6.00 |
| No. 1 Cast Scrap, net ton | 12.00 to 13.00 |
| Burnt Cast and Wrought, net ton | 8.00 to 9.00 |
| Old Iron Axles, net ton | 14.50 to 15.50 |
| Old Iron Rails, gross ton | 13.00 to 14.00 |
| Old Steel Rails, long, gross ton | 11.00 to 12.00 |
| Old Steel Rails, short, gross ton | 11.00 to 12.00 |
| Relaying Rails, 56 lb. and up, gross ton | 22.00 to 23.00 |
| Old Car Wheels, gross ton | 12.00 to 13.00 |
| Low Phosphorus Scrap, gross ton | 13.00 to 14.00 |

## St. Louis.

ST. LOUIS, MO., May 11, 1908.

Among the factors which are making for activity in certain lines are the heavy contracts being placed by the city of St. Louis. For instance, an order for 5000 tons of Cast Iron Pipe has been placed with the United States Cast Iron Pipe & Foundry Company. A leading house reports the sale of a round lot of Pig Iron, and one of the large companies finds a better demand for Structural Material. The American Car & Foundry Company will start up its rolling mill department early next month.

**Coke.**—Although there is no large business to report, yet Coke is moving steadily in filling prior contracts. In some instances orders for withholding shipment have been countermanded. New business is in lots of from 10 to 15 cars, shipment over the next four months up to the end of the year, and in one case the delivery covers a year from the present time. The price range for Foundry Coke is $2.15 to $2.50, f.o.b. oven, for scattered and future shipment, the lower price being for prompt shipment.

**Pig Iron.**—The market for Pig Iron is somewhat irregular as to price. Doubtless sellers are governed by quantity and time of delivery to some extent. The demand is much improved, however, and we learn that a local firm has just sold a round lot of 10,000 tons for June, July, August shipment, this being the largest transaction at St. Louis in Pig Iron since last fall. We hear of transactions in small lots aggregating 500 to 600 tons by one of the leading concerns during the week for immediate and future shipment, mostly at $11.75 to $12, Birmingham, though we understand a lot of 100 tons was contracted for at $11.50.

**Finished Iron and Steel.**—There is some improvement in Finished lines, at least inquiries for prices are coming in more freely. The demand for Structural Material has been more active, specifications coming mostly from local contractors. The market for Bars is not strong and specifications are light. The inquiry for Standard Rails has been better.

**Old Material.**—The market generally is weaker, as the mills are not buying. Trade is largely confined to the few leading dealers. We learn that one railroad has a list out this week of 1400 tons, while another is offering a lot of 500 tons Car Wheels. We hear of a sale of 1000 tons of Old Car Wheels at $12 per gross ton. Relaying Rails have advanced under scarcity and a more urgent demand. We quote, f.o.b. St. Louis, per gross ton, as follows:

| | |
|---|---|
| Old Iron Rails | $14.00 to $14.50 |
| Old Steel Rails, rerolling | 11.25 to 11.50 |
| Old Steel Rails, less than 3 ft. | 11.00 to 11.25 |
| Relaying Rails, standard sections, subject to inspection | 22.00 to 23.00 |
| Old Car Wheels | 12.00 to 12.25 |
| Heavy Melting Steel Scrap | 10.75 to 11.00 |
| Frogs, Switches and Guards, cut apart | 10.75 to 11.00 |
| Mixed Steel | 9.00 to 9.50 |

The following quotations are net ton:

| | |
|---|---|
| Iron Fish Plates | $11.50 to $12.00 |
| Iron Car Axles | 15.00 to 15.50 |
| No. 1 Railroad Wrought | 11.00 to 11.25 |
| No. 2 Railroad Wrought | 10.00 to 10.25 |
| Railway Springs | 9.75 to 10.00 |
| Locomotive Tires, smooth | 12.50 to 13.00 |
| No. 1 Dealers' Forge | 9.50 to 10.00 |
| Mixed Borings, &c. | 3.50 to 3.75 |
| No. 1 Boilers, cut to Sheets and Rings | 7.50 to 8.00 |
| No. 1 Cast Scrap | 10.50 to 10.75 |
| Stove Plate and Light Cast Scrap | 9.00 to 9.50 |
| Railroad Malleable | 9.50 to 10.00 |
| Agricultural Malleable | 8.50 to 9.00 |
| Pipes and Flues | 7.25 to 7.50 |

William B. Weston, manager of sales for the St. Louis District of the Carnegie Steel Company, Illinois Steel Company and Tennessee Coal, Iron & Railroad Company, announces the removal of the St. Louis offices of those companies from the Chemical Building to the Third National Bank Building.

## Birmingham.

BIRMINGHAM, ALA., May 9, 1908.

**Pig Iron.**—There are no indications that developments during the week relative to the basis of Southern quotations have stimulated the demand. Purchasers are apparently willing to await further developments, both as to price and the urgency of their requirements, and transactions continue to involve comparatively small lots, although the aggregate for the past week compares favorably with previous report. Among the sales reported are lots of 300 and 200 tons, respectively. The prices received do not indicate a decline from a basis of $11.50, Birmingham, for No. 2, which is generally considered the market price. The sale of 750 tons of High Manganese Iron is also reported, but the analysis is such that the price received is not a criterion of values. As a result of the recent Ore and Pig Iron Committee's meeting producers are of the opinion that quotations will be strengthened, and a further decline is hardly probable; however, recent transactions evince a disposition by some interests to take care of their output even if further concessions in prices are necessitated, and the ability of such concerns to meet the anticipated demand is the source of much speculation. It is to be noted that the present largest producer reports sales so far this month in excess of the output, and all smaller concerns are believed to have very little tonnage to offer for prompt deliveries. The recent statement that a large Southern interest was making an effort to dispose of its stock accumulation by exporting to Europe at a material reduction appears to have no foundation. It is known that an effort to place 100,000 tons in the district at $10.50, Birmingham, was unsuccessful, and the company to which the export business is accredited is probably the only interest that could have furnished the tonnage as specified. The re-

ported sale of 10,000 tons at $11.25 is also unconfirmed. The production of Foundry Iron in the State is now represented by 13 furnaces.

**Cast Iron Pipe.**—It is learned that the city of Rosswell, N. M., is to award contract for 1800 tons of Water Pipe at an early date. The aggregate of tonnage recently placed does not reach large proportions, but within the week one idle plant has been put in operation and the output of another was increased materially. An order for 1500 tons of Gas Pipe has been placed with the United States Cast Iron Pipe & Foundry Company, for the gas works at Birmingham, Ala., and Nashville, Tenn., while the American Cast Iron Pipe Company has been awarded contract for 800 tons of Water Pipe for the city of Fairview, Okla. The figures at which these orders were placed are not made public, but in the absence of advices to the contrary, quotations are believed to have been maintained and we quote nominally as follows, per net ton, f.o.b. cars here: 4 in. to 6 in., $23; 8 in. to 12 in., $22; over 12 in., average $21, with $1 per ton extra for Gas Pipe. Above quotations are probably shaded on large municipal contracts.

**Old Material.**—The market is very weak, with hardly sufficient business offered to ascertain just what prices are current. The consumption of Steel Scrap has been materially decreased within the week, and the demand for other grades is at an exceptionally low ebb. A further decline in prices is generally conceded inevitable, but in the absence of transactions, a revision of more than 50c. per ton is unwarranted, and we quote nominally as follows, per gross ton, f.o.b. cars, here:

| | |
|---|---|
| Old Iron Rails | $15.50 to $16.00 |
| Old Iron Axles | 14.50 to 15.00 |
| Old Steel Axles | 13.00 to 13.50 |
| No. 1 Railroad Wrought | 12.50 to 13.00 |
| No. 2 Railroad Wrought | 9.50 to 10.00 |
| No. 1 Country Wrought | 11.00 to 11.50 |
| No. 2 Country Wrought | 10.00 to 10.50 |
| Wrought Pipe and Flues | 9.00 to 9.50 |
| No. 1 Steel | 10.50 to 11.00 |
| No. 1 Machinery | 10.00 to 10.50 |
| Stove Plate and Light Cast | 9.00 to 9.50 |
| Cast Borings | 5.50 to 6.00 |

## Philadelphia.

PHILADELPHIA, PA., May 12, 1908.

The immediate outcome of the meeting of the Pig Iron and Ore Committee in New York on Thursday last has been a decided lowering of Pig Iron prices on the part of a number of Northern and Virginia producers. It has been clearly evident for some time that all the producers would not take the same view of the price situation, and cutting of the established base price by outside interests has been general. That the committee adjourned without fixing any basis of prices puts the trade in the same position as it was previous to the depression, and each producer will decide the price for himself and be governed largely by individual conditions. This is hardly likely to result in any continued sharp cutting of prices, as many furnaces have been selling close to the actual cost of production, and rather than sell at lower figures will either pile Iron and wait for a better demand or blow out their furnaces. In the meantime buyers are feeling the market and are hardly likely to purchase extensively until they feel that the bottom has been reached, or until general conditions warrant purchasing for future consumption. Finished materials have been in light demand pending the action taken by Pig Iron producers. Prices are being maintained in this territory, but the trade looks for some adjustment should the prices of Pig Iron recede to any material extent. Meanwhile buying of all kinds is along very narrow lines, and the tendency on the part of buyers is to defer purchases pending some further settlement of prices.

**Pig Iron.**—The situation is rather complicated, and it is difficult to say what prices on some grades of Pig Iron are or what they will be in the immediate future. In a number of cases producers who have been holding to the established basis of $18.25 have decided, since the meeting in New York last week, to meet the low prices which have been quoted heretofore by the outside interests, and in some instances even those prices have been shaded. There is no tendency, however, to meet the reported basis of $10, Birmingham, for Southern No. 2 Foundry, which price seems to be without fact. As far as we can learn, Southern producers are not inclined to shade $11.50, Birmingham, for this grade, and even at this price the amount of business done has been extremely small. A wide range of prices prevails for Northern Irons, and furnaces are governed entirely by individual conditions in making quotations. Some furnaces have maintained the old $18.25 basis for No. 2X Foundry, delivered in this territory, but they are disposing of practically no Iron. Others have shaded that price from 50 cents to $1.50 per ton, and have at that taken but few orders. With the market in its present condition consumers will take, as a rule, but small tonnages for immediate use, and will buy conservatively until they feel certain that the bottom has been reached. There has been some feeling of the market, both for early delivery as well as for the second half of the year, but sellers as a rule refuse to sell at to-day's prices for forward delivery; the usual advance asked for delivery during the second half being about 50 cents a ton. Producers are not forcing the market at to-day's prices, as they firmly believe that prices will harden just as soon as there is any improvement in the demand. Sales have been small, and on some grades no business has been done since last week. Northern No. 2X Foundry has been sold in lots ranging from carloads up to 100 tons at prices ranging from $16.75 to $17.25, delivered. Some furnaces, however, will not sell at these figures and are asking from 50 to 75 cents above those prices. A number of producers, acting individually, appear to have fixed on $17 as the price for No. 2X for delivery during the remainder of the second and the third quarter, with $18 named for delivery during the last quarter, or $17.50 would be accepted for deliveries covering the entire second half of the year, but buyers are holding off and a waiting market prevails. No sales of Virginia Foundry Irons have been reported. Makers are not seeking business, but quotations on No. 2X Foundry have receded to $17, delivered in this territory for the standard grades. A marked decline is to be noted in the price of Forge Iron, and some few sales of small tonnages of medium grade Iron have been sold as low as $15.25, delivered. On other brands, however, quotations are firm at $16, delivered, but owing to the inactive condition of mills the demand is extremely light. Basic Iron shows no movement, Steel mills, as a rule, having good tonnages of Iron still due them at high prices, and consumption is much restricted. In the absence of business it is difficult to name a price for this grade, but sellers have expressed a willingness to accept business at from $16.25 to $16.50, delivered. An inquiry for 500 tons of Low Phosphorus Iron has been on the market, but it is believed to be still unclosed. Sellers are offering this grade at $21.50 to $22, delivered, without resulting in business. Quotations, therefore, are almost entirely nominal on all grades of Pig Iron and represents at the time largely those at which sellers would be willing to take business for prompt delivery in buyers' yards, eastern Pennsylvania and adjoining territory. The range of prices would probably be as follows:

| | |
|---|---|
| Eastern Pennsylvania, No. 2 X Foundry | $16.75 to $17.50 |
| Eastern Pennsylvania, No. 2 Plain | 16.25 to 16.75 |
| Virginia, No. 2 X Foundry | 17.00 |
| Virginia, No. 2 Plain | 16.50 to 16.75 |
| Gray Forge | 15.25 to 16.00 |
| Basic | 16.25 to 16.50 |
| Low Phosphorus | 21.50 to 22.00 |

**Ferromanganese.**—Prices have an upward tendency, although sales have been extremely small. Those having Ferro in stock at tidewater would probably sell small lots at $43.50 to $44, while quotations on material subject to importation range around $46, Baltimore.

**Steel.**—Business is still very quiet. Mills continue to operate on a greatly restricted basis, and orders are largely of a day to day character. New orders are few, and specifications on old contracts come out sparingly. Quotations are unchanged. Ordinary Rolling Steel for delivery in this territory is quoted at $29.20, with Forging Steel at $31.20, subject to the usual extras for high carbons and large sizes.

**Plates.**—No particular change is to be noted in the demand. Orders are of a miscellaneous character, and are mainly for small lots, ranging up to 100 tons, for prompt delivery. The outlook is not very encouraging, there being but little business for large tonnages or forward delivery around. Prices are being well maintained, the following quotations being made for delivery in this territory:

| | Carload. Cents. | Part carload. Cents. |
|---|---|---|
| Tank, Bridge and Boat Steel | 1.85 | 1.90 |
| Flange or Boiler Steel | 1.95 | 2.05 |
| Commercial Firebox | 2.05 | 2.10 |
| Marine | 2.25 | 2.30 |
| Locomotive Firebox Steel | 2.35 | 2.40 |

The above are base prices for ¼-in. and heavier. The following extras apply:

| | Extra per 100 lb. |
|---|---|
| 3-16-in. thick | $0.10 |
| Nos. 7 and 8, B. W. G. | .15 |
| No. 9, B. W. G. | .25 |
| Plates over 100 to 110 in. | .05 |
| Plates over 110 to 115 in. | .10 |
| Plates over 115 to 120 in. | .15 |
| Plates over 120 to 125 in. | .25 |
| Plates over 125 to 130 in. | .50 |
| Plates over 130 in. | 1.00 |

**Structural Material.**—A moderate run of orders continues. Individually they are not large, but are sufficient in the aggregate to enable mills to about hold their own regarding production. A number of the fabricators have been taking some small business ranging up to 50 and 100 tons. One or two somewhat larger propositions have also come out, but there is still considerable hesitancy displayed on the part of buyers in placing orders for heavy tonnages. Prices are being maintained, 1.85c. to 2c. being named, according to specification.

**Sheets.**—The demand is unchanged. Orders are largely of a day to day character, and usually for small tonnages for prompt shipment. Consumers are not anticipating their wants, and mills continue to operate on a restricted basis. Quotations range as follows for mill shipment, with a tenth

extra for small lots: Nos. 18 to 20, 2.50c.; No. 22 to 24, 2.60c.; Nos. 25 to 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

**Bars.**—While some mills are holding to the established basis of 1.65c. for Refined Iron Bars, delivered in this territory, they are taking practically no business at that price. Specifications on Bars, contracted for at lower prices, constitute the bulk of the business around and the majority of sales have been by merchants and brokers who can supply these low priced Bars. Actual sales are small, and for prompt shipment, and prices range from 1.46c. to 1.65c., delivered in this territory.

**Coke.**—The trade is very dull. Business comes out slowly and tonnages sold are light and confined almost entirely to Foundry Coke. Prices are unchanged, and range from $2.15 to $2.40, at oven, for Foundry Coke, and $1.65 to $1.85, at oven, for Furnace Coke. For delivery in this territory the following range of prices is quoted:

| | |
|---|---|
| Connellsville Furnace Coke | $3.80 to $4.00 |
| Foundry Coke | 4.30 to 4.55 |
| Mountain Furnace Coke | 3.40 to 5.60 |
| Foundry Coke | 3.80 to 4.10 |

**Old Material.**—The market is extremely quiet. Sales have been confined largely to carload lots of miscellaneous material, no activity being shown in any particular grade. Railroad lists which recently came out show that the railroads are still holding large tonnages of Scrap, but mills are not bidding very extensively. There has been no special change in prices during the week, which are nominally quoted for prompt shipment, delivered in buyers' yards, eastern Pennsylvania and nearby territories as follows:

| | |
|---|---|
| No. 1 Steel Scrap and Crops | $12.75 to $13.25 |
| Low Phosphorus | 17.50 to 18.00 |
| Old Steel Axles | 17.50 to 18.00 |
| Old Iron Axles | 20.00 to 21.00 |
| Old Iron Rails | 17.00 to 18.00 |
| Old Car Wheels | 14.00 to 15.00 |
| Choice No. 1 R. R. Wrought | 15.00 to 15.50 |
| Machinery Cast | 15.00 to 15.50 |
| Wrought Iron Pipe | 11.50 to 12.00 |
| No. 1 Forge Fire Scrap | 11.50 to 12.00 |
| No. 2 Light Iron | 9.00 to 10.00 |
| Wrought Turnings | 8.75 to 9.25 |
| Stove Plate | 11.00 to 11.50 |
| Cast Borings | 7.75 to 8.25 |
| Grate Bars | 11.75 to 12.25 |

**Cast Iron Pipe.**—A sale of nearly 10,000 tons of Cast Iron Pipe is reported by the United States Cast Iron Pipe & Foundry Company to the Syracuse Suburban Water Company, Syracuse, N. Y. The Pipe ranges from 8 to 24 in. in diameter, and delivery is to be completed by November 1. The price is understood to be a shade under $23.50, delivered.

## Pittsburgh.

PARK BUILDING, May 13, 1908.—(*By Telegraph.*)

**Pig Iron.**—Buyers are still showing a disposition to place orders only for small lots for actual needs. The market is now wide open and prices on the whole are lower. We quote Bessemer Iron at $16, Valley furnace, or $16.90, Pittsburgh, but in some cases, and for only small lots, this price has been shaded 10c. to 15c. a ton. Basic Iron has declined squarely to $15, Valley furnace, two or three sellers offering it at that price. We note a sale of 200 tons at this figure. Struthers Furnace started up on Monday on Basic Iron. Northern No. 2 Foundry is about $14.75, Valley furnace, but this price has been shaded in some recent sales. There is no demand whatever for Forge Iron, and we quote Northern makes nominally at $14, Valley furnace, or $14.90, Pittsburgh.

**Steel.**—There is absolutely no new demand for Billets, but we are advised that consumers are taking out a little more tonnage on contracts. Sheet and Tin Bars are moving quite freely, and shipments by the Carnegie, Republic and Youngstown companies are fairly heavy. Leading producers of Steel are firmly holding at $28, Pittsburgh, and $28.50, Youngstown or Wheeling, for Bessemer and Open Hearth Billets; Sheet and Tin Bars taking $1 advance. Forging Billets are nominally $29 to $30, Pittsburgh.

(*By Mail.*)

Disappointment was felt last week in local Iron circles that nothing definite was done at the meeting of the Ore and Pig Iron Committee, held in New York last week. While the Ore interests insist that last year's prices on Ore will be held this year, there are some in the trade, among them consumers of Ore and Pig Iron, who believe that to start with Ore and make a reduction all along the line on Ore, Pig Iron, Steel and Finished Material would help the situation and stimulate buying. However, all indications up to this time are that the Steel Corporation and the other large Steel interests will continue to make every effort to hold prices where they are, believing that when the proper time comes the Iron trade will open up. There is undoubtedly a broadening of credit throughout the country, and this ought to result in the railroads and other industrial enterprises being able before long to get money on their securities and purchase material. The demand for Pig Iron continues dull. In the Mahoning and Shenango valleys and adjacent territory, Dover Furnace, of M. A. Hanna & Co. is running on Basic; Youngstown Steel and No. 3 Shenango on Bessemer; Stewart Iron Company on Low Phosphorus, and Girard and one Andrews & Hitchcock stack on Foundry. Struthers Furnace, which makes only Basic, will probably start this week. The nominal price of Bessemer Iron is $16, Valley, or $16.90, Pittsburgh, but this price has been slightly shaded in some cases. Basic Iron is slightly easier, and is being offered by two or three sellers at $15, at furnace. Very little is doing in Foundry Iron, and Northern No. 2 is about $14.75, Valley, or $15.65, Pittsburgh. Billets are moving a little more freely on contracts, but no new tonnage is being placed. The demand for Finished Iron and Steel is slowly getting better, Tin Plate and Merchant Pipe being more active than the other lines.

**Ferromanganese.**—The low prices ruling are bringing out some business, and there are more inquiries in the market than for some time. One local consumer has bought 800 to 1000 tons of foreign Ferro, deliveries extending over a year, on the basis of $43.50, seaboard, or $45.45, Pittsburgh. Another consumer is in the market for 150 tons for delivery over the last six months of this year. We quote 80 per cent. foreign Ferro for prompt delivery at $43, and for extended delivery at $43.50, seaboard, the freight rate to Pittsburgh being $1.95 a ton.

**Steel Rails.**—The Carnegie Steel Company took in the past week about 1400 tons of Light Rails, but aside from two or three orders for export nothing has been done in Standard Sections. Nos. 1 and 2 Rail mills of the Carnegie Steel Company, at Bessemer, are running this week, but are gaited to 35 or 40 per cent. of capacity, while No. 3 mill, on which Light Rails are rolled, is shut down. Regular prices on Light Rails, which continue to be shaded from $3 to $4 a ton by rerolling mills, are as follows: 25 to 45 lb. Sections, $28; 20-lb., $29; 16-lb., $30, and 12-lb., $32. We quote Standard Sections at $28, at mill, and Angle Splice Bars at 1.65c., at mill.

**Ferrosilicon.**—Not much inquiry is noted, and we quote 50 per cent. at $70, f.o.b. Pittsburgh.

**Skelp.**—Little new business is being placed, and specifications against contracts are only fair. We quote: Grooved Steel Skelp, 1.55c. to 1.60c.; Sheared Steel Skelp, 1.65c. to 1.70c.; Grooved Iron Skelp, 1.75c. to 1.80c.; Sheared Iron Skelp, 1.85c. to 1.90c., Pittsburgh.

**Muck Bar.**—No sales have been made in this market on which to base actual prices. We quote best grades of Muck Bar, made from all Pig Iron, at nominally $26 to $27.

**Rods.**—Only an occasional small order for actual needs is being placed. Nominal prices are $35 for Bessemer Rods, $36 for Open Hearth, and $37 for Chain Rods, f.o.b. Pittsburgh.

**Plates.**—Reports are that a large tonnage in Plates has been taken by a local interest for some new boats, but this has not been officially confirmed. Buyers continue to place orders only for actual needs. Narrow sizes are still shaded by some mills about $2 a ton. Regular prices are as follows: Tank Plates, ¼-in. thick, 6¼ in. up to 100 in. wide, 1.70c., base, at mills, Pittsburgh. Extras over this price are as follows:

| | Extra per 100 lb. |
|---|---|
| Gauges lighter than ¼-in. to and including 3-16-in. Plates on thin edges | $0.10 |
| Gauges Nos. 7 and 8 | .15 |
| Gauge No. 9 | .25 |
| Plates over 100 to 110 in | .05 |
| Plates over 110 to 115 in | .10 |
| Plates over 115 to 120 in | .15 |
| Plates over 120 to 125 in | .25 |
| Plates over 125 to 130 in | .50 |
| Plates over 130 in | 1.00 |
| All sketches (excepting straight taper Plates varying not more than 4 in. in width at ends, narrowest end being not less than 30 in.) | .10 |
| Complete Circles | .20 |
| Boiler and Flange Steel Plates | .10 |
| "A. B. M. A." and ordinary Firebox Steel Plates | .20 |
| Still Bottom Steel | .30 |
| Marine Steel | .40 |

Shell grade of steel is abandoned.

TERMS.—Net cash 30 days. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes, 14 in. wide down to 6 in. of Tank, Ship or Bridge quality.

**Structural Material.**—It is expected that the addition to the Fort Pitt Hotel, about 1800 tons, will be given out this week. No contracts of moment have been placed in this district recently, and not much new business is in sight. The mills are able to make prompt shipments, and while official prices on plain material are probably being held, fabricating on some jobs is being done at less than cost. We quote Beams and Channels, up to 15 in., 1.70c.; over 15 in., 1.80c.; Angles, 3 x 2 x ¼ in. thick, up to 6 x 6 in., 1.70c.; 8 x 8 and 7 x 3½ in., 1.80c.; Zees, 3 in. and larger, 1.70c.; Tees, 3 in. and larger, 1.75c.; Bulb Angles and Deck

Beams, 2c. Under the Steel Bar card Angles, Channels and Tees under 3 in. are 1.70c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

**Sheets.**—It is learned that a number of the large jobbers in Sheets have notified their customers not to buy any more than they absolutely need until July 1, advising them that a reduction in prices of Sheets is likely to be made between now and that date. This has brought out a statement from the independent Sheet manufacturers that no reduction in prices of Sheets is contemplated, and that consumers will not run any risk in placing their orders for delivery ahead at present prices. New business is light, but it is known a good deal of work is being held up as long as possible, in the belief that prices may be lowered. Regular prices, which are sometimes slightly shaded by only a few mills, are as follows: Blue Annealed Sheets, No. 10 and heavier, 1.80c.; Nos. 11 and 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 2c.; Box Annealed, Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.60c.; No. 30, 2.70c. Galvanized Sheets: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.65c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.70c.; No. 30, 3.95c. No. 28 Painted Roofing Sheets, $1.75 per square, and Galvanized Roofing Sheets, No. 28, $3.10 per square, for 2½-in. corrugations. These prices are subject to a rebate of 5c. per 100 lb. to the large trade under the usual conditions, jobbers charging the usual advances for small lots from store.

**Cotton Ties.**—Fair orders have been placed by consumers since the season opened, but the volume is much less than at this time last year, which was an exceptionally good year in this trade. We quote as follows: 3000 bundle lots and over, 85c.; less than 3000 bundle lots, 88c., f.o.b. Pittsburgh.

**Hoops and Bands.**—Specifications against contracts are only fair, while new business is lacking. The prohibition movement which is sweeping over the country, and is particularly strong in some sections, has restricted considerably the demand for Hoops. Regular prices are as follows: Steel Hoops at $2, base, full Hoop card extras; Steel Bands, $1.60, base, half Steel card extras, all f.o.b. cars, Pittsburgh, Pa., in carload lots, for delivery during 1908.

**Tin Plate.**—The last two plants to be started up by the American Sheet & Tin Plate Company were the United States Works at Demmler and the Sabraton Works at Morgantown W. Va., which was closed about a week for repairs. This company is now operating practically all of its capacity, only three or four isolated plants being idle, and these will probably not be operated again, unless in times of excessive demand. The independent Tin Plate mills are not operating to as full capacity as those of the American Sheet & Tin Plate Company, and have only a fair amount of work on their books. The latter company gets a large tonnage from affiliated interests, notably the American Can Company, which is much the heaviest consumer of Bright Plates in the country. We are advised by the mills that regular prices on Tin Plate are being maintained. We quote at $3.70 for 100-lb. Cokes, 14 x 20, f.o.b. Pittsburgh, terms 30 days, less 2 per cent. off for cash in 10 days, this price being subject to the usual rebate of 5c. per base box in large lots.

**Iron and Steel Bars.**—This trade is in very unsatisfactory condition, new demand being very light, and only for small orders, while specifications against contracts are coming in slowly. The differential of $2 a ton in favor of Iron Bars is diverting some tonnage to the Bar Iron mills from customers who formerly used Steel. The large consumers, notably the Steel car interests and implement makers, are buying little, while small consumers are placing orders only for actual needs. It is estimated that not more than 25 per cent. of the entire capacity of the country in Iron and Steel Bars is active at present. A few mills that reroll Bars from old Rails are shading prices of Steel Bars, but they make only a few sizes, and some consumers refuse to use these Bars, preferring to pay the full price to regular makers. We quote Iron Bars at 1.50c. for the Pittsburgh District, and 1.47., Pittsburgh, for Chicago and points further west. Steel Bars remain very firm, at 1.60c., Pittsburgh.

**Spelter.**—Stocks of Spelter held by the smelters are reported to be unusually heavy, and the tone of the market is weak. The market is lower, and we quote prime grades of Western Spelter at 4.45c., East St. Louis, equal to 4.57½c., Pittsburgh. On a firm offer, this would probably be shaded.

**Railroad Spikes.**—Reports that the Erie Railroad was in the market for 10,000 kegs of Spikes were investigated, but it was found the road was only getting an estimate on some proposed improvements, and the order was not placed. It is also untrue that the New York Central recently bought 15,000 kegs of Spikes. Railroads are buying very little, confining their orders to carloads or less for repair work. There is a fair amount of new business in the smaller sizes, but this is mostly in small lots for actual needs. We quote: Standard sizes, 4½ x 9-16 in., at $1.70, and the smaller sizes at $1.80 per 100 lb. in carloads and larger lots, with an advance of 5c. per 100 lb. for less than carload, f.o.b. Pittsburgh.

**Merchant Steel.**—The demand for Shafting and Merchant Steels is very light and only for small lots. We quote Cold Rolled Shafting, on contracts for 100 tons and over, 57 per cent. off; carloads, 56 per cent. off, and less than carloads, 52 per cent. off, on which carload freight is allowed within base territory. Nominal prices on Merchant Steel are as follows: Smooth Finished Machinery Steel, 1.80c. to 1.90c.; Flat Sleigh Shoe, 1.75c. to 1.85c.; Cutter Shoe Steel, 2.15c. to 2.25c.; Toe Calk, 2.10c. to 2.15c.; Railroad Spring Steel, 1.60c. to 1.75c., the higher price being for Pennsylvania Railroad analysis. Carriage Spring Steel is 1.80c.; Tire Steel, Iron, finished, 1½ in. and wider, 1.60c.; under 1½ in., 1.75c. Planished Tire Steel is 1.80c., all f.o.b. at mill.

**Pipes and Tubes.**—The aggregate of business booked by the mills in April showed a fair increase over March, and the outlook is that May will be larger than April. No large contracts are being placed, the trade pursuing the policy of giving small orders for actual needs, thus keeping stocks down to a minimum. Persistent reports that prices of Pipe would be reduced three points, or $6 a ton, on or before May 16, are emphatically denied by the leading makers, who state there is no foundation whatever for such reports. The Pipe mills as a whole are running to about 50 per cent. of capacity, which is a creditable showing when general conditions are considered. Net discounts on Steel Pipe to the large trade on ¾ to 6 in. remain at 74 and 5 per cent. off list, while on Iron Pipe the absolute minimum is 72 and 5 per cent. Discounts on Steel Pipe are as follows:

*Merchant Pipe.*

| | Jobbers, carloads. Steel. Black. | Galv. |
|---|---|---|
| | % | % |
| ⅛ to ¼ in. | 65 | 49 |
| ⅜ in. | 67 | 53 |
| ½ in. | 69 | 57 |
| ¾ to 6 in. | 73 | 63 |
| 7 to 12 in. | 70 | 55 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 58 | 46 |
| ½ to 4 in. | 65 | 53 |
| 4½ to 8 in. | 61 | 49 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 54 | 43 |

Discounts on Genuine Iron Pipe are as follows:

| | Black. | Galv. |
|---|---|---|
| | % | % |
| ⅛ and ¼ in. | 63 | .. |
| ⅜ in. | 65 | 51 |
| ½ in. | 67 | 55 |
| ¾ to 6 in. | 71 | 61 |
| 7 to 12 in. | 68 | 53 |
| Extra strong, plain ends: | | |
| ⅛ to ⅜ in. | 56 | 44 |
| ½ to 4 in. | 63 | 51 |
| 4½ to 8 in. | 59 | 47 |
| Double extra strong, plain ends: | | |
| ½ to 8 in. | 52 | 41 |

**Boiler Tubes.**—The railroads are buying practically nothing, while the general consumers of Merchant Tubes are placing only small orders for actual needs. There is some unevenness in prices, which are more or less shaded, depending on the order. Regular discounts on Merchant Tubes in small lots, on which an extra 5 per cent. is allowed in carloads, are as follows:

*Boiler Tubes.*

| | Iron. | Steel. |
|---|---|---|
| 1 to 1½ in. | 42 | 47 |
| 1¾ to 2¼ in. | 42 | 59 |
| 2½ in. | 47 | 61 |
| 2¾ to 5 in. | 52 | 65 |
| 6 to 13 in. | 42 | 59 |

2½ in. and smaller, over 18 ft. long, 10 per cent. net extra.
2¾ in. and larger, over 22 ft. long, 10 per cent. net extra.

**Connellsville Coke.**—The H. C. Frick Coke Company in the past two weeks has blown in a number of ovens, but it is understood this has been done largely to give employment to the men rather than for any actual needs for the Coke. A furnace interest is in the market for its supply of Coke for the last half of the year, and we understand has been quoted as low as $1.50 for good Furnace Coke, covering that delivery. We quote Connellsville Furnace Coke for prompt shipment at $1.50 to $1.60, and 72-hr. Foundry at $2 to $2.25, at oven. Outside makes of Furnace and Foundry Coke are being offered as low as $1.35 for Furnace, and about $1.85 for Foundry. The output of Coke in the Upper and Lower Connellsville regions last week was 166,175 tons, an increase over the previous week of 2000 tons.

**Iron and Steel Scrap.**—The market is practically lifeless as far as sales are concerned, and prices are weak. The Pittsburgh Steel Company, which has large Rod and Wire mills at Monessen, Pa., and is building a new Open Hearth Steel plant to contain eight 60-ton furnaces, to be ready for operation in July or early in August, has no blast furnaces, and will buy its supply of Pig Iron and Scrap in the open market. It is understood the company has already bought a considerable tonnage of Scrap of various kinds and at relatively low prices. There is more pressure on the part of dealers to make sales, and on firm offers it is probable our

prices would be shaded from 25c. to 50c. a ton. Dealers quote about as follows per gross ton: Heavy Steel Scrap, Pittsburgh, Steubenville or Sharon delivery, $12.75 to $13; Cast Borings, $7.25 to $7.50; No. 1 Railroad Wrought, $13.25 to $13.50; No. 1 Cast, $14.25 to $14.50; Bundled Sheet Scrap, $8.50 to $9, at shipping point; Sheet Bar Crop Ends, $16 to $16.50; No. 1 Busheling Scrap, $12 to $12.25; No. 2, $9 to $9.25; Iron Axles, $19 to $19.50; Steel Axles, $16.50 to $17; Low Phosphorus Melting Stock, $16; Old Steel Rails, short pieces for Open Hearth use, $12.75 to $13; Rerolling Rails, lower in price, $13.50 to $13.75; Machine Shop Turnings, $8 to $8.25; Grate Bars, $12 to $12.50; Railroad Malleable Scrap, $11.25 to $12. We note sales of about 200 tons of Cast Iron Borings on the basis of $7.50, Pittsburgh, and about 500 tons of Heavy Steel Scrap at close to $12.50, Pittsburgh. Sales are also reported of 2000 to 3000 tons of Bundled Sheet Scrap at about $8.50 or less at shipping point.

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The Iron City Steel Company, 717-718 Bessemer Building, Pittsburgh, has been appointed sales agent in the Pittsburgh District for John T. Church, who now operates the Glen Iron Furnace, making cold blast charcoal pig iron and located at Glen Iron, Pa.

## Cleveland.

CLEVELAND, OHIO, May 12, 1908.

**Iron Ore.**—The first Ore cargo for a Lake Erie port this season will be shipped from Ashland about the end of this week. Shipments of only a few scattering cargoes are expected this month. With the exception of a few small trial lots, no sales of Ore were reported during the past week, and some of the Ore salesmen who have been visiting their trade find that furnacemen are not taking any interest in the Ore market at present, and will not think of buying for some time. The Merchant Ore firms are holding as firmly as ever to the established prices, and the feeling is becoming more general that prices will be maintained throughout the season. There is one report of the resale of some Bessemer Ore at the established price. Orders for the shipment of Ore from the docks to the furnaces have fallen off considerably since April, and little Ore is moving at the present time. No improvement has appeared in the lake situation. Another meeting of the vessel owners will be held in this city to-day to fix a date for a general start in navigation. Even at that time Ore cargoes will be scarce. Vesselmen say that if a general start is not made until July 15 all the Ore that will be needed can be brought down without trouble before the close of navigation. With the exception of a few of its largest boats, the Steel Corporation is fitting out none of its Ore freighters, and will probably not start many of its boats before June. A few of the boats managed in the office of M. A. Hanna & Co. are being fitted out, and may be placed in commission soon. Other Merchant Ore firms that operate boats are taking no steps to start them. The carrying charges for Ore for the season have not yet been fixed. A little chartering has been done with the understanding that the regular rate for the season shall be paid. Prices for 1908 delivery at Lake Erie docks, per gross ton, are as follows: Old Range Bessemer, $5; Mesaba Bessemer, $4.75; Old Range Non-Bessemer, $4.20; Mesaba Non-Bessemer, $4; Siliceous Bessemer, $2.75; Siliceous Non-Bessemer, $2.35 to $2.60.

**Pig Iron.**—Stimulated probably by lower prices, the Foundry Iron market has shown more activity the past week than for some time. Inquiries for good sized tonnages have brought out offers of Iron at low prices. A local foundry that is in the market for 1000 to 3000 tons of Foundry Iron to average 2.75 per cent. Silicon, generally considered as No. 1, has been quoted a price of $14.35 for the third quarter, and $14.85 for the fourth quarter, Valley furnace. While some lower priced Iron is being offered, a few of the furnaces are holding firmly to $14.75, Valley furnace, as their lowest price for No. 2, and others remain out of the market at the prevailing prices. We note the sale of one 500 ton lot of No. 2 on the basis of $14.85, Valley furnace, for No. 2, for last half delivery, and the sale of several car lots of No. 2 for spot shipment at $15, Valley furnace. Among the inquiries is one for 1000 tons of No. 2 for spot shipment for which a contract will probably be closed this week. There are also an inquiry for 2000 tons and two for 1000 tons each, for last half delivery. Southern Iron is weaker, and a leading producer that has been holding its price at $12, Birmingham, has reduced its quotation to $11.50 for No. 2. Southern No. 2 Iron has been offered at $11.15, Birmingham, or $15.50, Cleveland. An inquiry is out for 1200 tons of No. 2 Southern from a northern Ohio consumer. An improvement is noted in inquiries for Basic Iron. A local interest is holding Basic at $15.50 for spot shipment, but consumers are not willing to pay that price. Some of the furnace interests report a fair volume of shipping orders on Foundry Iron on contracts, but large consumers of Malleable Bessemer are taking little contract Iron. For early shipment we quote, delivered, Cleveland, as follows:

| | |
|---|---|
| Bessemer | $17.00 |
| Northern Foundry, No. 1 | $15.35 to 16.00 |
| Northern Foundry, No. 2 | 15.00 to 15.65 |
| Northern Foundry, No. 3 | 14.50 to 15.15 |
| Southern Foundry, No. 2 | 15.40 to 15.85 |
| Gray Forge | 14.90 |

**Coke.**—A little more activity is seen in Foundry Coke, and some contracts were closed during the week for the balance of the year delivery at $2.25, at oven, for 72-hr. Foundry Coke. Some inquiries are out for delivery until July 1, 1909. There is one good sized inquiry for Furnace Coke. For prompt shipment we quote Connellsville Furnace Coke at $1.50 to $1.60. We quote the same Coke on contract at $1.60 to $1.75. Foundry Coke for spot shipment is selling at $2 to $2.25.

**Finished Iron and Steel.**—A general feeling prevails among consumers that prices will be reduced in some lines, and this is resulting in a curtailment of purchases. A leading producer reports a larger volume of orders than for some time, but the orders are even smaller in size than they have been in the past few months, so that the tonnage has not increased. The only order of any size placed was given the Lorain Steel Company by the Municipal Traction Company for 2500 tons of Girder Rails for street railroad extensions in Cleveland. The general volume of new business remains about stationary, being light in all lines. The majority of the larger mills are maintaining prices, and reports of price cutting are no more frequent. The demand for Iron and Steel Bars shows no improvement and is still light, although a few of the mills report slightly better specifications, particularly on Steel Bars. Of the local mills the Union is running this week, but the Empire is shut down. Jobbers and small mills are still cutting the price of Iron Bars to 1.40c., Pittsburgh, and it is rumored that one mill is cutting Steel Bars to 1.50c., Pittsburgh. The demand for Plates is light, and price concessions of $2 a ton are being made on the narrow sizes. Sheets are in small demand and weak, the price being shaded $2 a ton, particularly on Black Sheets. Some good specifications were received from the Lake Shore Railroad for Spikes, Angle Bars and Bolts. The demand for Structural Material is light. A few sales of Billets in car lots are reported. We quote Iron Bars at 1.50c. to 1.60c., Cleveland, for car lots; Steel Bars, 1.70c., Cleveland, for car lots, half extras; Beams and Channels, 1.80c., base, Cleveland, and Plates, ¼-in. and heavier, 1.80c., Cleveland. Dealers quote Sheets, mill shipments, car lots, Cleveland, as follows: Blue Annealed, No. 10, 1.90c.; Box Annealed, No. 28, 2.60c.; Galvanized, No. 28, 3.65c. Warehouse prices remain unchanged. Jobber quote Iron and Steel Bars out of stock at 1.70c. to 1.80c. Beams and Channels out of stock are 2.10c. to 2.15c., base. Warehouse prices on Sheets are as follows: Blue Annealed, No. 10, 2.10c.; Box Annealed, No. 28, 2.70c.; Galvanized, No. 28, 3.85c. Warehouse prices on Boiler Tubes, 2¾ to 5 in. are 64 per cent. discount, and on Black Merchant Iron Pipe, base sizes, 67 per cent. discount.

**Old Material.**—The market shows no improvement, being as dull as it has been at any time in the past few months. Mills are consuming but a limited amount, and the little buying they are doing is in car lots. Dealers are not looking for an improvement in conditions for some time, and are buying only to fill orders. The market is weak all along the line, but owing to the absence of transactions quotations are mainly nominal. Dealers' prices to the trade, per gross ton, f.o.b. Cleveland, are as follows:

| | |
|---|---|
| Old Steel Rails | $11.00 to $11.50 |
| Old Iron Rails | 14.50 to 15.50 |
| Steel Car Axles | 16.00 to 17.00 |
| Old Car Wheels | 12.50 to 13.00 |
| Relaying Rails, 50 lb. and over | 21.00 to 22.00 |
| Heavy Melting Steel | 11.00 to 11.50 |
| Railroad Malleable | 11.00 to 11.50 |
| Agricultural Malleable | 11.00 to 11.50 |
| Light Bundled Sheet Scrap | 7.50 to 8.50 |

The following quotations are per net ton, f.o.b. Cleveland:

| | |
|---|---|
| Iron Car Axles | $16.00 to $16.50 |
| Cast Borings | 5.00 to 5.50 |
| Iron and Steel Turnings and Drillings | 6.00 to 7.00 |
| Steel Axle Turnings | 7.50 to 8.00 |
| No. 1 Busheling | 10.50 to 11.00 |
| No. 1 Railroad Wrought | 12.00 to 12.50 |
| No. 1 Cast | 11.50 to 12.50 |
| Stove Plate | 10.00 to 10.50 |
| Bundled Tin Scrap | 8.00 to 9.00 |

## The German Iron Market.

BERLIN, April 30, 1908.—While the state of the Iron market remains unsatisfactory generally, in a few departments a slight improvement is reported. On the whole, however, consumers continue to pursue a waiting policy, buying as small quantities as possible in the hope that better prices will be offered them later on. The dearness of money continues to be felt as a restraining effect in all directions.

### Production Falling Off.

The rate of production at the blast furnaces is being further reduced. The March make of Pig Iron amounted to 1,046,998 metric tons. This is about 52,000 tons less than

in March, 1907, and about 91,650 tons less than the high water mark touched in October. In view of the heavy reduction of the American production during the past six months, it may be justly said that Germany is still turning out Iron at almost full speed. How long this will continue to be the case, however, is quite uncertain, for consumption is slacking up still further, stocks are accumulating at the furnaces and with dealers, and furnaces are being blown out. From all indications it can safely be predicted that the rate of smelting will be further curtailed. The furnaces are meeting with greater and greater difficulties in disposing of their output, and competition in the Iron market is growing sharper for the Rhenish-Westphalian Pig Iron Syndicate. English Bessemer Pig Iron is being offered at cheaper prices in Germany, and Luxemburg-Lorraine Pig Iron is being substituted for the product of the syndicate wherever this is possible.

The Rhenish-Wesaphalian Syndicate has refused to yield to the many appeals for price reductions, assigning as its reason that the price of Coal and Coke is kept so high that it cannot sell Iron cheaper than at present. Its prices are as follows: Spiegeleisen, 85 to 87 marks; Puddling, 74; Steel making qualities, 65; Basic Iron, 64.80; German Foundry, No. 1, 76; No. 3, 71; German Bessemer, 80. On the Duesseldorf Exchange last Friday Luxemburg Puddling was quoted at 52 to 52.80 marks; English Foundry, No. 3, 71 to 72, and Soft Steel Bars, 105 to 110. These are reductions, but other prices were unchanged.

In view of the reduction of work at the furnaces the business in Ores is also sluggish. The mines in the Siegerland District have latterly been cutting down production pretty sharply, and miners have been discharged in considerable numbers. The importation of foreign Ores has also been checked, and even at the reduced prices at which they are now being offered there is little disposition to buy. The business in Ores in the Luxemburg-Lorraine District is very dull, and sharp restrictions of production are reported. In most of the private mines it is mentioned that the output has been reduced to about one-half.

### The Steel Works Association.

From the stock market's standpoint the most favorable news from the Iron industry for several months was found in the March production report of the Steel Works Association. The shipments for the month rose to 486,348 tons, which compares with 420,508 tons in February and 508,309 tons in March, 1907. Shipments were thus only 22,000 tons less than a year ago. The better result of the month was due to several causes. The demand for Billets improved somewhat after the association refused to make another price reduction, and the demand for Structural Shapes was increased owing to increased building activity in a few parts of the country. Besides this, it is reported that the works made special efforts to finish up delivery of many orders by the end of March, when the business year of the association ends. Under these circumstances the shipments of Billets rose from 108,854 tons in February to 131,486 tons in March, and Structural Shapes from 104,092 to 155,521 tons. On the other hand, the movement of Steel Rails and Ties was lighter than for any month since October. Shipments reached only 198,840 tons, against 207,562 tons in February. The improvement in the movement of Billets and Structural Shapes was interpreted by speculators as indicating a considerable betterment in the tendency of the trade and Iron shares have recently been bought in considerable amounts at rising prices, but the leading newspaper of Essen has thought it necessary to turn a strong jet of cold water upon such premature optimism. It denies emphatically that there is any general and substantial improvement in the market situation.

### The Bar Trade.

The most interesting section of the market continues to be that of Bars. The demoralization of prices in this line, described in a previous report, has continued. It is due to the fact that many of the great mixed works, as soon as their orders in Rails, Structural Shapes and Billets are worked off, turn to rolling Bars in order to avoid shutting down. The prices in the former class of goods are fixed by the association, but there is free competition in Bars, so far as prices are concerned. Strong efforts have been made recently to organize the Bar mills into a special kartell, and last week it was authentically reported that these efforts had been crowned with success. It appeared that all disputed points had been satisfactorily adjusted, allotments fixed, and prices arranged, ranging from 107.50 to 110 marks. One important concern, however, it was stated, still held out against joining, and to-day the news comes that the entire scheme has fallen through. The Wrought Iron Bar business is also in a bad way. It has not been possible to reduce the price of this specialty to keep pace with the reduction in Soft Steel Bars, owing to the high prices of Coal and Pig Iron; hence consumers are turning to Steel Bars wherever they can well be substituted for Wrought Iron.

Another department of the market in which negotiations looking toward a combination are in progress is that of Plates and Sheets. The preliminary work has so far proceeded that a general meeting has been called for about two weeks hence, when it is hoped that the organization will be effected. This applies, however, only to Heavy Plates, while the rollers of Light Plates are apparently not yet ready to organize. Only in a part of the Plate business is trade satisfactory. Ordinary Plates of Soft Steel have fallen to 115 marks, while Heavy Plates are sold down to 112.50 marks. Sheets command about 125 marks.

### The Hardware Trade.

Conditions in the hardware trade are growing worse. Shops have less work to do than a month ago, and prices have been further marked down till they are now very near the point where profits cannot be earned. The export trade to the United States continues to be within very narrow limits, and other countries as well are taking lighter amounts of goods. Complaints are increasing among hardware manufacturers that the tariff treaties that went into effect two years ago are having a narrowing effect upon their foreign markets in Europe. Some of the treaty countries raised their duties against German hardware, and it is now observed that it is growing harder for German goods to compete in those countries. Shops have sprung up there which are successfully meeting German competition, not only in those countries themselves, but they are actually carrying their competition into outside markets.

In Solingen the cutlery trade is suffering more severely from the lack of American orders. Many of the shops have been compelled to curtail production and to discharge hands. Prices have further declined. The only part of the hardware trade that is doing fairly well is that for the manufacture of car fittings. Car shops are still well employed and their requirements in fittings have not abated.

The German Niles Tool Works, situated near Berlin, established eight year ago for the manufacture of heavy machine tools on American models, did better last year than usual. Every year hitherto had shown a deficit, but last year there was a profit of 330,800 marks from the factory. The sales department, however, absorbed 321,500 marks, and it was necessary to write off 292,000 marks on machinery and other property. Thus the loss shown on the balance sheet was only 270,000 marks. The total deficit now amounts to 5,780,000 marks.

## British Iron and Steel Markets.

GLASGOW, April 30, 1908.

**Beams and Tubes.**—A conference has been held of makers of Rolled Steel Beams in the United Kingdom, Germany and Belgium for the purpose of endeavoring to arrive at a basis of agreement for regulating the export trade of the several countries. The international production of Steel Beams is enormous, and the competition is very keen for all contracts that come into the international market. Prices are at times severely cut. Large quantities of both German and Belgian Beams have been imported into Great Britain for many years, and they largely regulate prices in the trade. The conference was the suggestion of the German Verband, and the broad basis of a combination was agreed upon for securing to makers a certain measure of monopoly in their respective countries and districts, and for minimizing competition in the outside export markets. But in the trade in Great Britain not much faith is rested in the combination. Nor is there in negotiations that have been proceeding for the amalgamation of companies in the Scotch Tube trade, and for a selling agreement between them and the Continental producers. There is much talk, but little prospect of an effective combination.

**Tin Plates and Bars.**—At the quarterly meeting of the Midland Iron Trade there was a lack of confidence, and only hand-to-mouth buying is to be expected. Representatives of South Wales firms gave the only touch of animation to the market, and spoke more hopefully of their prospects. The increased cost of Tin has strengthened their hands, but makers of Staffordshire Tin Plate have not taken any advantage of it. The marked Bar makers decided not to touch the basis price, which was reduced 10s. in January, and since then the standard has been maintained at £8 10s. Makers of North Staffordshire Crown Bars have reduced 5s., making the basis £7, the second drop of 5s. this year. The South Wales Tin Plate market continues strong, and considerable business has been done in 14 by 18¾ oil sizes at 13s., while some makers for June-July delivery are making 1½d. to 3d. above this figure. Finished Black Plate has been advanced 5s., Siemens quality being from £9 12s. 6d. to £9 15s. There have been heavy arrivals of foreign Bars, the total imports for March from America and Germany being over 20,000 tons. There is a steady demand from Tin Plate makers, and most of the Welsh Steel works are well employed. Prices in Wales remain at from £4 12s. 6d. to £4 13s. 6d. for Siemens quality. Preparations have been made for the erection of a dozen additional Steel mills at Morriston. Welsh Hematite is steady at 62s. 6d. f.o.t. Cardiff.

**Pig Iron.**—Business is quiet in all departments of the home trade, and the labor troubles in the shipbuilding trade

are causing anxiety. Stocks of Pig Iron increase in makers' yards. Cleveland warrants are tightly held, and the holders exact heavy premiums for lending. The majority of dealers are afraid to operate either way in the present state of the market. Trade reports are pessimistic, and are not improved by the state of the speculative account, buyers continuing to restrict their purchases to immediate requirements, so that the outlook for the near future is not encouraging.

**Scotch Iron and Steel.**—In the Steel trade of Scotland the recent reduction in prices has had the effect of bringing out a small amount of work, but the volume has not been so large as was anticipated. A new arrangement regarding material for export includes Ship Plates, Angles and Bars, and it is anticipated that it will have the effect of stopping the cutting in prices which has been prevalent for some time. There has been a slight improvement in home demand in the Bar Iron trade, but the mills are running irregularly. The bulk of the export orders are being secured by Continental competitors. Canadian inquiries are not leading to much business, and the orders are going to Belgium. The home demand shows no improvement, and it is with difficulty that the Steel works in Scotland are kept employed. The Steel trade can hardly show material change until there is an improvement in the Clyde shipbuilding yards.

Bar Iron makers in the west of Scotland report that new business is extremely scarce, and specifications come to hand slowly and in small quantities. At a meeting of the associated makers it was decided to make an all round reduction of prices of 5s. per ton, the basis now being £6 10s. per ton for Crown Bars less 5 per cent. The north of England trade has been affected by this action, and minimum selling prices there are now based on £6 10s. per ton for Crown Bars less 5 per cent.

### The Midlands.

There has been very little improvement in the Midland Iron trade circles of late. Many of the factories have been standing for a week, and there are few orders on the books, only one or two branches having been able to make a good start after Easter. Builders' brass goods are, however, selling more freely. Horticultural and plumbers' brass goods have also been selling briskly. The cycle and motor car makers have had a little spurt, but the business is below the average, and there are still scores of last season's machines undisposed of. Some of the Coventry motor works are on short time, and one concern has discharged nearly all its body hands.

A better demand is reported for Brass and Iron Wood Screws, and manufacturers are looking forward to a busy time. There is a fair inquiry for Bolts, Nuts and Rivets. Chain and Anchor makers are not doing well and ships' fittings generally are only in moderate request. Agricultural tools and implements are finding a better market. The demand for Corrugated Sheets has fallen off again. Makers of Scales and Weights have not done so well as they anticipated, as the result of the new Board of Trade regulations, though they have had a fairly good run.

The trade in Wrought Iron Tubes and Fittings has improved during the past week or two. Pipes for high-pressure heating and for the underwork of railroad cars are in excellent demand, but this is not a large business. Engineers and Ironfounders are not doing so much as at the beginning of the year, and there are a considerable number of men out of employment and on short time.

In Staffordshire, April has been the dullest month this year. The manufactured iron works were idle during the Easter holidays. The Steel trade is devoid of new business. Continental supplies are offered at £4 12s. 6d. for Sheet Bars and Billets, but English quotations are £4 12s. 6d to £4 15s. A large buyer would have no diffifficulty in getting English bars at £4 12s. 6d. per ton, delivered, but for smaller orders £4 15s. would be required. Ironmasters complain of the high price of coal, but colliery owners hold out little prospect to them of any ease.

## Metal Market.

NEW YORK, May 13, 1908.

**Pig Tin.**—A week of excessive dullness was followed by a sharp decline to-day, the London market closing this afternoon at £132 10s. for spot and £132 5s. for futures, £7 under the price of last week. Stocks of Tin in this country are not large, and are concentrated in a few hands, but arrivals have been of good amount, aggregating 2035 tons so far this month. There are afloat for American ports 1553 tons. One of the reasons given for the sharp decline to-day was liquidation by Chinese holders, it being estimated that Tin is held speculatively in China and Penang to the extent of 3500 tons. Shipments from the Straits are expected to be large this month, and it would not be surprising if they exceeded 5000 tons. Price changes during the week have been toward lower levels, and are as follows:

| | Cents. |
|---|---|
| May 6 | 31.00 to 31.05 |
| May 7 | 30.75 |
| May 8 | 30.55 |
| May 11 | 30.60 |
| May 12 | 30.40 |
| May 13 | 29.50 to 29.75 |

The market early this afternoon was very much unsettled, and a wide difference of opinion exists as to the probable course of prices later.

**Copper.**—Prices are steady, Electrolytic being unchanged, at 12.62½c. to 12.75c., but Lake is a trifle lower, at 12.75c. to 12.87½c. Buying is small. Some of the larger American consumers who are bare of stocks are only coming into the market when they have orders to fill for their own products. Somewhat the same conditions prevail in Europe. Reports of finds of rich Ore at lower levels in Butte mines do not help the market for Ingot Copper. Active smelting operations have recently been started at several new properties, and this movement bids fair to continue. Among the uncertain features of the Copper market are the stocks held in Japan, and the fact that the Rio Tinto interests have not sold yet. One factor in the market which may have some influence on Copper prices in the future is the large cash accumulation by at least one of the prominent electrical machinery manufacturers. These idle funds may be used to buy round blocks of Copper if attractive prices are made. Exports so far this month are small, the total so far falling slightly below 7000 tons. Prices abroad are about 10s. lower than last week, at £57 2s. 6d. for spot, and £57 17s. 6d. for futures. Best Selected is held at £61. L. Vogelstein & Co., agents for Aron Hirsch & Sohn, Halberstadt, Germany, figure the German supplies of Copper for the first quarter of the year as 42,830 tons, as compared with supplies during the same period in 1907 of 24,393 tons.

**Spelter.**—The market for Spelter is easier. Prime Western brands can be had in St. Louis at 4.50c. to 4.52½c. and in New York at 4.60c. to 4.65c., although the inside price is available only for round lots. Brass mill special is held at about 4.70c. to 4.75c.

**Pig Lead.**—The market is firm. A steady advance in Lead prices has driven consumers in, and there has been a good demand. Prices are now steady at 4.25c., New York, and 4.12½c. to 4.15c., St. Louis.

**Nickel.**—Quotations continue unchanged at 45c. for ton lots and 50c. to 60c. for smaller quantities.

**Antimony.**—In spite of attempts to raise prices to a higher level, the market continues dull and nominally unchanged from last week at 8.75c. to 8.87½c. for Cookson's, 8.50c. to 8.75c. for Hallett's and 8.25c. to 8.50c. for outside brands.

**Tin Plates.**—Improvement is noted in the demand for Terne Plates, which heretofore have lagged, and the good business in Coke Plates continues. Prices are firm at $3.89, New York, and $3.70, Pittsburgh, for 100-lb. IC Coke Plates. Welsh Tin Plates are 1½d. lower at 12s. 4½d.

**Old Metals.**—Dealers' selling prices are steady and practically unchanged as follows:

| | Cents. |
|---|---|
| Copper, Heavy and Crucible | 12.00 to 12.25 |
| Copper, Heavy and Wire | 11.75 to 12.00 |
| Copper, Light and Bottoms | 11.00 to 11.25 |
| Brass, Heavy | 9.00 to 9.25 |
| Brass, Light | 7.00 to 7.50 |
| Heavy Machine Composition | 11.50 to 11.75 |
| Clean Brass Turnings | 8.00 to 8.50 |
| Composition Turnings | 9.00 to 9.50 |
| Lead, Heavy | 3.90 |
| Lead, Tea | 3.55 |
| Zinc | 3.50 |

## Iron and Industrial Stocks.

NEW YORK, May 13, 1908.

The stock market has shown continuous strength in the period covered since our last report. While railroad stocks have displayed the strongest tendencies, the industrial stocks have been firm, and in some cases the prices realized have been the highest since the panic of last fall. The range of prices on active iron and steel stocks from Thursday of last week to Tuesday of the present week has been as follows: United States Steel common 36¼ to 37½, preferred 100⅜ to 102½; Car & Foundry common 36¼ to 38, preferred 97 to 98; Locomotive common 49¾, ex div. to 52⅜, preferred 102 to 103½; Steel Foundries common 6½, preferred 32 to 33; Cambria Steel 30 to 31; Colorado Fuel 26½ to 28⅛; Crucible Steel common 5⅜ to 5½, preferred 39 to 40¼; Pressed Steel common 28¾ to 29¾; Railway Spring common 34½ to 35½, preferred 85; Republic common 17⅞ to 18⅝, preferred 67½ to 68¾; Sloss-Sheffield common 46 to 47⅛; Cast Iron Pipe common 25⅛ to 26½, preferred 73 to 74⅞. Last transactions up to 1.30 p.m. to-day are reported at the following prices: United States Steel common 37⅜, preferred 101¾, bonds 96¼; Car & Foundry common 37½, preferred 97; Locomotive common 51, preferred 103; Colorado Fuel 28¾; Pressed Steel common 29¼, preferred 84¾; Railway Spring common 35½; Republic common 18¼, preferred 68½; Sloss-Sheffield common 47½; Cast Iron Pipe common 26, preferred 73½; Can common 5⅛, preferred 56⅝.

The Merchandise Creditors' Committee of the Westinghouse Electric & Mfg. Company has until June 1 to proceed with the proposed reorganization plan. The plan provides for financing the debts of the company by the issuance of

$4,000,000 stock in payment of merchandise debts and $6,000,000 to stockholders at par to raise new capital. Up to last week merchandise creditors holding $3,500,000 claims out of a total of $4,000,000 had agreed to the plan. About 25 per cent., or $1,500,000 of the $6,000,000 stock to be taken by stockholders, has been subscribed for by about 500 of them.

Of the issue of $3,000,000 of 6 per cent. "first refunding mortgage gold bonds," made by the Inland Steel Company, Chicago, Ill., and dated April 1, 1908, $2,500,000 is reserved to retire the first mortgage 5's outstanding. The new issue consists of 20-year serial bonds, payable $150,000 a year.

The special meeting of the American Steel Foundries to act upon the plan for reorganizing the company's finances adjourned until June 4 at noon in Jersey City. Thus far 90 per cent. of the stockholders, it is said, have assented to the plan.

**Dividends.**—The Niles-Bement Pond Company has declared a quarterly dividend of 1½ per cent. on the preferred stock, payable May 15.

The Pratt & Whitney Company has declared a quarterly dividend of 1½ per cent. on the preferred stock, payable May 15.

The Ashton Valve Company, Boston, Mass., has declared the regular quarterly dividend of 1 per cent., payable May 15.

## New York.

NEW YORK, May 13, 1908.

**Pig Iron.**—The market is now wide open, the understanding among the Eastern Pig Iron associations to abstain from selling below $18.25, tidewater, having ceased. The result has been that an increased number of sellers show a disposition to meet the market, and that sellers and buyers are busy testing the question what the market really is. Northern Iron is being offered at $16.75 for No. 2 Foundry, at tidewater, and at $16.25 to $16.50 for Basic Pig, delivered. We cannot learn that there have been any sales of any consequence, but it is probable that some covering of third and fourth quarter requirements will soon be done. We quote, at tidewater, as follows: No. 1 Northern Iron, $17.50 to $17.75; No. 2 Foundry, $16.75 to $17.25, and No. 2 Plain, $16 to $16.50. Alabama Irons are selling at $16.25 to $16.50 for No. 1 Foundry, and $15.50 to $15.75 for No. 2 Foundry.

**Steel Rails.**—Three contracts amounting to 20,000 tons are announced for the first time this week, though a part of the business was booked a short time before: Maine Central, 6000 tons; Boston & Albany, 8000 tons; Michigan Central, 6000 tons. All are for Bessemer Rails and were taken by the Lackawanna Steel Company. It is understood that roundly the Rail bookings for 1908, including business carried over, amount to 1,500,000 tons. About one-third of this was carried over from last year, and this portion doubtless includes some business that cannot be considered alive, though it stands uncanceled on the books of the manufacturers.

**Structural Material.**—Shipments of plain material from the mills are in fair volume, and while considerably short of the rate of last year are yet distinctly better than those of Plates. Fabricators still remark on the large volume of construction work on which figures are being asked—all of it apparently being seriously considered. In some cases the provision of capital is the occasion of delay; in others, there is an evident expectation of lower prices, or at least the belief that nothing will be lost by waiting. The American Bridge Company has just been awarded the La Salle Hotel at Chicago, about 8000 tons, by the United States Realty & Improvement Company. It is stated that the latter company has another building under contract that will require about 2000 tons of Steel. The Delaware, Lackawanna & Western Railroad has finally come into the market for the Steel for its new shops at Scranton, Pa., and will take upwards of 4000 tons. At Birmingham, Ala., the American Bridge Company has just taken the contract for the addition to the Brown-Marx office building, 1700 tons. Seattle, Wash., interests are figuring on Steel for the proposed Rainier-Grand Hotel. The contract may run up to 1200 to 1500 tons. In New York City the Snare & Triest Company has taken the general contract for the South Ferry municipal pier which will have seven slips and will require about 3000 tons of Steel. The Steel contract is not yet placed. The Pittsburgh & Lake Erie bridge, at Beaver, Pa., is still among held-up tonnage, and with 15,000 tons involved there is understood to be close figuring. It is not expected the award will be made this month. The past week was exceptional in that practically no railroad bridge work was awarded—the second such week this year, and the second also in the experience of large fabricating companies. We continue our quotations on mill shipments, delivery at tidewater, as follows: Beams, Channels, Angles, and Zees, 1.86c.; Tees, 1.91c. On Beams, 18 to 24 in., and Angles over 6 in., the extra is 0.10c. Material cut to length is sold from stock at 2¼c. to 2½c.

**Ferroalloys.**—A fair demand exists for Ferromanganese, prices being unchanged at $43.50, at seaboard. At this level, however, sellers are unwilling to make contracts for last quarter delivery. The market for Ferrosilicon is unsatisfactory, and the low price of $70 continues to be reported for resale lots. First hands are doing practically nothing in this market.

**Bars.**—Conditions in the Bar Iron trade appear to be growing worse. It may be possible that the low prices now ruling are still due to the efforts of dealers and brokers to market their purchases made some time ago, but the impression is growing that some of the manufacturers are now going after business a little more aggressively. Prices are reported on a basis of 1.45c. to 1.50c., New York, with rumors of lower figures having been made, although the regular price is still quoted by some mills of 1.50c., Pittsburgh, or 1.66c., New York. Steel Bars are held by the leading mills at 1.60c., Pittsburgh, or 1.76c., New York.

**Plates.**—An interesting occurrence of the past week was the placing of an order for 21 boilers for the city of New York with a boiler manufacturer in eastern Pennsylvania. The local boiler makers were exceedingly anxious to get this order, but the figures quoted by them were too high to secure it. As all shops working up Plates are now doing little, the demand is exceedingly light. Prices of standard sizes of Plates are maintained as follows, at tidewater: Sheared Plates, 1.86c. to 1.96c.; Flange Plates, 1.96c. to 2.06c.; Marine Plates, 2.26c. to 2.36c.; Fire Box Plates, 2.75c. to 3.50c., according to specifications.

**Cast Iron Pipe.**—Bids are to be opened to-day on water works extensions for the city of New York, requiring about 2800 tons of 30-in. Pipe. It is stated that prices given to the contractors who are figuring on this work are in the vicinity of $23.50 per net ton. A little better inquiry is reported for carload lots, but the demand for larger quantities is decidedly quiet. It is stated that better prices are being received by foundries on contracts made with Pennsylvania municipalities than the rates ruling in this territory. The American Water Works Association is holding a convention in Washington this week which is being largely attended by representatives of Pipe interests. Carload lots of 6-in. are quoted at $23.50 to $24 per net ton, tidewater.

**Old Material.**—The sales of the past week included several lots of Steel Scrap aggregating about 3000 tons, some lots of Stove Plate, one of these comprising 500 tons, and scattering quantities of Cast Scrap. If any shortage is found in the line of Old Material, it is most likely to be in Steel Scrap of good quality. Steel works are inquiring for this class of material, but will only take it at a low price. The buyers of foundry stock are in the same way only taking any supplies when they can get them at low rates. A good demand is reported for Wrought Pipe, but it is wanted for special purposes, as the rolling mills are buying practically nothing from dealers. Relaying Rails are in rather better demand than other classes of Old Material. Car Wheels are especially dull and weak, as stocks are heavy. Quotations are about as follows, per gross ton, New York City:

| | |
|---|---|
| Old Girder and T Rails for melting | $10.50 to $11.00 |
| Heavy Melting Steel Scrap | 10.50 to 11.00 |
| Old Steel Rails, rerolling lengths | 10.50 to 11.50 |
| Relaying Rails | 20.00 to 21.00 |
| Old Iron Rails | 14.00 to 15.00 |
| Standard Hammered Iron Car Axles | 15.50 to 16.50 |
| Old Steel Car Axles | 14.00 to 14.50 |
| No. 1 Railroad Wrought | 11.50 to 12.50 |
| Iron Track Scrap | 9.50 to 10.50 |
| No. 1 Yard Wrought, long | 10.50 to 11.50 |
| No. 1 Yard Wrought, short | 9.50 to 10.50 |
| Light Iron | 5.00 to 6.00 |
| Cast Borings | 4.50 to 5.50 |
| Wrought Turnings | 6.00 to 7.00 |
| Wrought Pipe | 9.00 to 10.00 |
| Old Car Wheels | 13.50 to 14.50 |
| No. 1 Heavy Cast, broken up | 13.00 to 14.00 |
| Stove Plate | 9.00 to 10.00 |
| Locomotive Grate Bars | 9.50 to 10.50 |
| Malleable Cast | 11.00 to 11.50 |

Baughman & Neidermeier, Youngstown, Ohio, will erect the foundation and do the concrete work for the blast furnace to be erected at Scottdale, Pa., by Corrigan, McKinney & Co., Cleveland. The contract calls for concrete foundations for the stack, boiler house, cast house, new electric light plant, pump house, &c. The Variety Iron Works Company, Cleveland, Ohio, has been awarded the contract for the iron plate work. This company is erecting the two furnaces of the Youngstown Sheet & Tube Company.

Judge Lanning, in the United States District Court at Trenton, N. J., May 11, discharged Frank Wyant and Benjamin Pierce as temporary receivers of the New Jersey and West Virginia Bridge Company, and substituted Benjamin J. Parker of Shrewsbury as permanent receiver.

# The Machinery Trade.

NEW YORK, May 13, 1908.

Several new propositions came before the trade the past week which are expected to bring considerable business shortly to the machinery houses, and as they show evidence of early closing they afford some encouragement to the trade, which continues dull. The most important of these new developments are probably the tool list issued by the Grand Trunk Railroad and the inquiries sent out by Westinghouse, Church, Kerr & Co. for equipment of the new shops, for which they are engineers, to be erected at Spirit Lake, Idaho, for the Idaho & Washington Northern Railroad. These inquiries, with those issued a few weeks ago by the Chicago, Milwaukee & St. Paul and Delaware, Lackawanna & Western railroads, which, we understand, have not been closed, make a fair aggregate of railroad business before the trade. Aside from this business there is very little in sight. The actual transactions were of minor importance and were not numerous enough to increase the light demand for machinery. Some branches of manufacture are more active and an increased demand for supplies is reported.

The formal opening of the Machinery Club, New York, will take place on May 21. The programme will be limited to an address by George A. Post, president of the Standard Coupler Company, and music. The Plans and Scope Committee, which is headed by W. P. Pressinger of the Chicago Pneumatic Tool Company, has arranged, in conjunction with the House Committee of the club, to serve a light luncheon, and about 100 well-known men in the machinery and metal trades will act as a Reception Committee. Invitations for the affair will be issued within the next few days.

Invitations have been issued for the formal opening of the Railroad Club of New York, on the twenty-first and twenty-second floors of the Cortlandt Building of the Hudson Terminals, 30 Church street, on May 18.

### Grand Trunk Railroad's Machinery List.

Inquiries have been received from the Grand Trunk Railroad for a good sized list of machinery, on which bids are asked for at an early date. This road is making a number of improvements and, it is reported, will erect at Barrie, Ont., new shops, for which additional machinery will probably be required. The list, issued under date of May 5 by A. Butze, general purchasing agent, Montreal, Que., covers the following machine tools and equipment:

One 125-b.h.p. stationary two-crank compound engine, with 18-in. pulley by 13-in. face; two 150-hp. 130-lb. pressure return flue boilers, with fittings and grates; one hydraulic wheel press, capacity 300 tons, for wheels 90 in. in diameter, with double acting belt driven pump; one portable locomotive cylinder boring bar; one portable valve seat rotary planer for locomotives, capacity for 18 x 24 and 26 in. cylinders, 23 in. across corners of valve seat and 21¼ x 21¾ in. across studs, also 20 x 28 in. cylinders, 27 and 26½ x 27 in. across valve seat and studs, respectively; one steam driven air compressor, capacity 300 ft. free air per minute; one No. 6 steel blower, with bottom horizontal discharge; one tube welder, with necessary tools for welding, swagging and scarfing; one Ferguson tube welding furnace; one 10-ton jib crane, 20-ft. radius, compound geared, 20-ft. mast, 8-ft. lift; two 4-ton jib cranes, 15-ft. radius, 20-ft. mast, 8-ft. lift; one 2-ton jib crane, with carriage for chain block, 20-ft. mast, 8-ft. lift; one brass finishing lathe, 16-in. swing, with two and three jawed chuck; one three-spindle vertical wood boring machine to clear 13 in.; one 20-in. upright drill press, with square base, back geared, power feed, capacity to ¾ in.; one power hack saw, capacity 5 x 6 in.; one tube cutting machine; one pipe threading and cutting machine; one 24-in. back geared belt driven crank shaper, with heavy pattern vise and graduated base swivel; one 15-in. belt driven slotting machine aranged for future electric drive; one large size extra heavy ripping saw, carrying 32-in. diameter saw; one 5-ft. arm full universal radial drill, belt driven; one 20-in. engine lathe, 6 ft. between centers, belt driven; one emery wheel stand for 12 x 2 in. wheels; one 42-in. engine lathe, belt driven, 7 ft. between centers; one 42 x 42 in. by 10 ft. planer, belt driven, right and left heads; one 54-in. belt driven boring and turning mill, with 50-in. table, to take 36 in. under cross rail; one 42-in. car wheel lathe, belt driven; one duplex screw threading machine, with capacity from ⅜ to 2 in. dies and taps and extra head for staybolt threads; one 1500-lb. automatic double acting steam hammer; one 100-in. heavy driving wheel lathe, belt driven.

For some time the Idaho & Washington Northern Railroad has been preparing plans for its proposed new shops at Spirit Lake, Idaho, the approximate cost of which will be about $100,000. Because of the large amount of machinery required for the equipment of such shops the trade has been following the matter closely, and is especially interested from the fact that it is probable that the purchases of machinery will be made in this city. The contract for the construction and equipment of the shops has been placed with Westinghouse, Church, Kerr & Co., New York, who have within the past few days had inquiries in the market for some of the equipment. We understand from a reliable source that the engineering firm is to build and equip the shops completely, and as there are to be a number of buildings, including a machine and electric shop, freight car and repair shops, blacksmith shop, power house, &c., machinery houses in this district are likely to secure some nice orders for machinery for these shops. The buildings will be of brick and equipped with modern machinery, and, it is understood, will be erected as rapidly as possible with the view of their completion early next fall.

Some equipment will be required by the Cutler Mfg. Company, Rochester, N. Y., for equipping its new building, contract for the construction of which has been placed. The largest and most important machinery required are special machines for forming sections, which have been designed and built by special order. For the power plant not more than 75 hp. will be required; the type of power plant has not yet been decided upon, both steam and gas producer plants being under consideration. The new factory will be exclusively devoted to the manufacture of Cutler mail chutes and will be 126 x 128 ft., the front portion for a depth of 30 ft. to be two stories in hight, giving accommodation for the office force, draftsmen, superintendent, &c. The remainder of the building will be one story in hight, with saw tooth roof. It will be equipped for electro plating, enameling, buffing and polishing, glass grinding, &c. The executive offices will remain in the Cutler Building.

The Darley Engineering Company has been organized for the purpose of manufacturing and selling appliances for the hoisting and conveying of metals by suction and by air pressure. The company has acquired the sole rights for the United States to manufacture and sell the suction conveyor formerly controlled by the Economic Engineering & Construction Company of Chicago, and on May 1 the business of the latter company was taken over. The company will have offices at Pittsburgh in the Farmers' Bank Building, at 80 Broadway, New York, and the Monadnock Block, Chicago, Ill. W. W. Darley, president, will have charge of the Pittsburgh office. W. W. Stadelman, vice-president, and M. D. Chapman, secretary and treasurer, will be in charge of the New York office. W. A. Sharp, vice-president, will be in charge of the Chicago office.

### Important Power and Tunnel Work.

The large amount of excavation work contemplated by the city, on which some bids have been received and others are to be opened shortly, will necessitate the installation of a considerable amount of contractors' machinery, and it is expected that the trade will shortly be benefited as awards for some of the work will undoubtedly be made within the next few weeks. On May 8 bids were opened for the construction of the Fourth Avenue Subway in Brooklyn and it was found that 34 companies bid on the six sections, only one contractor putting in a bid on the construction of the entire route. The six lowest bids for the subway proper and the pipe galleries show an aggregate cost only slightly above the chief engineer's estimate. It is the intention to construct only one or two sections at a time, the work to spread over a number of years, and it is hoped that the award will be made soon for at least the first section. In this connection the proposals for work on the city's new water shed up the State are of interest. On May 12 bids were opened for the construction of the Wallkill pressure tunnel, a little over 4 miles long, in Ulster County. The Board of Water Supply, New York, will receive bids until June 2 for the construction of a deep pressure tunnel, 14½ ft. inside diameter and about 23,600 ft. long, and other work in the vicinity of Rondout.

A contract for engineering and constructing a complete hydro-electric plant for the Central of Georgia Power Company has been awarded to J. G. White & Co., 49 Exchange place, New York. A plant which is to have a normal capacity of 12,500 kw., generated by water wheels under a 100-ft. head, will be built on the Ocmulgee River, about 36 miles above Macon, Ga., and will supply electricity to Macon and other points in the vicinity. The contract includes the construction of transmission lines, substations, &c. The crest of the dam to be built will be about 750 ft. Permission has been obtained by the Central of Georgia Power Company to issue $16,000,000 of bonds and $20,000,000 in stock. W. J. Massee is president and Charles F. Howe is chief engineer. The financial arrangements for the company were made by A. B. Leech & Co., 149 Broadway. The fact that this contract has been awarded to a company with New York headquarters is of particular interest to the trade, as it is highly probable that purchasing will be done from this city.

The City Commissioners of Galveston, Texas, will receive bids until May 28 for the mechanical equipment of an air lift pumping station at Alta Loma, Texas, consisting of one 1200 cu. ft. air compressor, one 700 cu. ft. air compressor, one 200-hp. water tube boiler and accessories, including 16,615 ft. of air pipe.

## Chicago Machinery Market.

CHICAGO, ILL., May 12, 1908.

The opening week of May has developed no changes in the situation, either for better or for worse, as respects the machinery trade. Orders for equipment of various kinds continue to eminate largely from the less important interests. New industrial enterprises of important magnitude are rare, and while a few are in prospect they have not progressed farther than the stage of tentative plans and cannot be counted upon with any certainty to swell the volume of business for months to come. Some lines are, however, relatively more active than others; as a result of the increasing consumption of cement and the consequent use of crushed rock there is a fair demand for rock crushing machinery. The requirements for such machinery has in recent years been marked by a great increase in capacity, and instead of the comparatively small equipment formerly used crushers weighing upward of 200 tons, with a capacity of 600 tons of crushed stone per hour, are now being built. The outlook for trade, while not particularly inviting in any direction, is certainly more promising in stone crushing and cement machinery than in many other lines.

One of the results of the present period of depression will doubtless be to encourage export trade. When, as has been the case for several years, the domestic demand is sufficient to fill shop capacities to overflowing there is not much incentive for the manufacturer to cultivate outside fields; consequently very little attention has been given to foreign trade, but now that trade has fallen off so that home orders are holding insufficient to keep plants engaged machinery makers are finding time to investigate outside markets. Many new connections of this kind will probably be formed during this year, which will be not only of temporary but lasting advantage.

Outside of the miscellaneous orders which for several weeks have constituted the bulk of the business done by the machine tool houses nothing of importance is noted. In its general volume business in machine tools, though not increasing, is holding fairly even.

H. Brewer & Co., Tecumseh, Mich., who now occupy the foundry at Shawnee and Evans streets, have purchased a piece of land on which they will erect a modern and larger plant to provide for their increasing business. The contract for the construction of the plant has been let, the main building of which will be of brick, one story, 90 x 332 ft., and will contain the machine, woodworking and forge shops, office and warehouse. Adjacent to this building will be the boiler house, which will be equipped with a 5 x 16 ft. tubular boiler, supplying steam for two engines. In the rear of the main building will be erected the foundry, 60 x 100 ft., connected with which will be a cupola and blower house 30 x 30 ft. and a coreroom 25 ft. square. In the rear of the foundry will be a brick pattern house, 50 x 60 ft., and core bins, sand bins, oil houses and other smaller structures. The plant will be modernly equipped, the foundry being served by jib cranes, and spur tracks from the Lake Shore & Michigan Southern Railroad will connect all the buildings. Considerable new machinery will be required, the selections to be made by Davis Brown, superintendent, and the requisitions will be sent out by Charles Burridge, purchasing agent.

Advices received within the past week from a number of machinery manufacturers throughout the West, while noting the comparative dullness resulting from the general slack-up in business, reflect a spirit of hopefulness as to the development of a fairly good demand in the later months of the year. The opinion is generally expressed that though a return to the phenomenal activity of the past two years cannot reasonably be expected, yet material improvement over present conditions is looked for. Very few Western plants are idle, and some are quite actively engaged. In Rockford, Ill., all shops are operating part capacity at least, and the machine tool industries are running about 40 hr. per week.

Contracts have been let by the Elkhart Motor Car Company, Elkhart, Ind., for a two-story cement factory building, 40 x 120 ft., work upon which is now in progress. A part of the machinery equipment has been purchased, but more will be required when the new building is ready for occupancy, which will be about July 15.

Some of the long time delivery orders for machinery placed last year will help to swell the totals of this year's business. Shipments on such orders are being made by the Allis-Chalmers Company, Milwaukee, Wis., of blast furnace gas engines weighing 750 tons each, at the rate of three per month. These are principally for the United States Steel Corporation, being designed for the equipment of its central plants at Pittsburgh, Chicago, Cleveland, and Gary, Ind. Besides this equipment, which was contracted for last year to be delivered in 12 to 18 months, the company is working on and shipping other outfits for domestic and foreign trade, including mining and crushing machinery, also pumping machinery for various municipal water works systems.

The American Well Works, Aurora, Ill., reports progressive improvement in business, with prospects of a fair trade through the summer months. The total volume of business will, however, for the same period, fall below that of last year.

Owing to the recent death of its president, Geo. N. Black, and the early expiration of leasehold on its present site the Ætna Foundry & Machine Company, Springfield, Ill., is taking steps through J. W. Black, the administrator of the estate, to wind up and terminate the business.

Plans and specifications have been prepared for a new power house and additional boiler capacity by the Charity Hospital, New Orleans, La. The equipment required will include boilers of 600 hp., together with pumps and heaters, bids on which will be received by the Board of Supervisors until May 20. At a later day an electric lighting plant will be installed, at a cost of about $16,000. John Ponder is chief engineer.

In order to secure more commodious quarters the Pfannmueller Engineering Company, Chicago, has moved its offices from suite 1134 to 1003 First National Bank Building. The company reports some improvement in the demand for second-hand generative and motive power equipment, and among the sales recently made are included one 20 x 42 in. Corliss engine to a Western municipal electric light plant, one 14 x 36 in. engine for installation in a Detroit manufacturing plant, one 100-kw. direct connected engine and generator to the Devoe-Reynolds Paint Company, Chicago; one 12 x 36 in. Bates Corliss engine, with a 60-kw. Milwaukee generator, for a municipal lighting plant, and two 250-hp. Scotch marine internally fired boilers, with Morrison corrugated flue furnaces, to a Chicago manufacturing plant. The old power plant equipment of the Pabst Brewing Company, Milwaukee, which was supplanted by the installation of a new direct connected central power station, including 25 boilers and 14 engines, was recently purchased by the company; it was also the successful bidder on 12 engines and six dynamos sold by the State Prison, Jefferson City, Mo., to make way for a new plant.

The business interests of the H. W. Johns-Manville Company in Detroit and the territory adjacent thereto have increased to such an extent that a new branch is about to be opened by the company. This branch will be located at 72 Jefferson avenue, Detroit, under the management of Willard K. Bush, who is well and favorably known throughout that section of the country, having been connected with the Milwaukee branch of the company for a number of years. The company will carry a complete stock of goods at the Detroit branch, so that shipments can ordinarly be made direct from stock.

## Cleveland Machinery Market.

CLEVELAND, OHIO, May 12, 1908.

Taken as a whole, the local machinery market looks a little brighter. Although some builders of machine tools report conditions no better and their volume of orders very light, others notice a slight improvement. Some inquiries that came into the market two or three months ago have finally resulted in the placing of orders, and these have enabled a few builders to slightly increase the working forces in their plants. The volume of business transacted by machine tool dealers is still very light and seems to show no improvement. The buying is mostly single tools in small sizes. The demand for second-hand tools is slightly better. A considerable quantity is being offered to dealers.

Builders of heavy and special machinery report little improvement in the prospects, which are not very encouraging. There are three or four inquiries for large installations, one of these being from France, but with these exceptions little work is in sight in the way of heavy machinery equipment. Builders are figuring on a few coal handling plants, but in two cases where large plants were projected it has been decided to postpone the work until next year. With the exception of one list from the Grand Trunk Railroad, tool builders have received no inquiries from the railroads.

Builders of small motors report considerable improvement in orders as compared with earlier in the year. Much of the demand comes from shops that are substituting motors for belt drive. The demand for cranes shows no improvement and orders are scarce.

With some manufacturing plants business shows an improvement. Several of the large automobile plants in this city and Detroit are fairly busy. Within about 30 days they will complete their 1908 output and begin preparations for building their 1909 models. According to present plans at least two or three automobile builders will add considerably to their machine tool equipment during the summer.

The jobbing foundry situation is in a very unsatisfactory condition and shows no improvement. Buying is in small lots for immediate needs, and foundrymen who are tied up

with high priced pig iron say that they are unable to compete with the low prices that are being quoted by some foundrymen who have their old stocks well used up and can base the price of castings on the present market price of pig iron.

The local money market is still tight and banks are making very few loans. This condition is not favorable to the launching of new industrial enterprises, and a number are being held up until the financial situation becomes easier.

In addition to the machine tool equipment needed for the new Technical High School, a list of which was published in this report last week, the Cleveland Board of Education will receive bids until June 1 for the following motors for that school: One 20-hp., with a speed of approximately 900 rev. per min.; two 15-hp., speed 1000 rev.; one 15-hp., speed 900 rev.; one 5-hp., speed 1000 rev.; two 3½-hp., speed 800 rev.; three 5-hp., speed 800 rev.; one 1-hp., speed 1600 rev.; one 1½-hp., speed 900 rev.

The National Acme Mfg. Company, Cleveland, reports a satisfactory improvement in the demand for screw machines during the past few weeks, and the increase in the volume of business has enabled the company to increase its working force. The company has taken some fairly good orders for which it had inquiries some time ago, but which were slow in materializing. The improvement is in domestic orders, the foreign business still being light.

The Lincoln Motor Works Company has received an order for 14 motors from the Brooklyn Navy Yard. The motors will replace the belt drive on tools already installed. The company has just filled an order for 28 motors from the Youngstown Sheet & Tube Company, the motors to be used in driving pipe threading machines. With other scattering orders the plant of the company is well filled with work, and the prospects for a good volume of business all the year are very satisfactory.

The Lake Erie Forge Company, that was recently formed to manufacture tool steel die forgings, a general line of machine forgings, &c., has located its plant at 4922-4926 Hamilton avenue, in the building formerly occupied by the Lane Tool Company, and will begin operations in a few days. John A. Markley is president, and Walter H. Haker, secretary and treasurer.

The Brown Hoisting Machinery Company has taken a contract for building additional coke bins for the United States Steel Corporation at Gary, Ind. The company recently completed over 2600 ft. of ore bins at the Gary plant.

The Grant Automatic Machine Company, which was organized some time ago, is making preparations to begin the manufacture of a new four-spindle automatic screw machine, the invention of J. J. Grant. The company will not build a manufacturing plant for the present.

The Atlas Brass Company, recently organized, has opened a general brass foundry at 991 South Front street, Columbus, Ohio. The owners of the plant are John Wittman and I. H. Pleukharp.

Bucyrus, Ohio, has decided to issue $90,000 in bonds to build a municipal lighting plant.

## Cincinnati Machinery Market.

CINCINNATI, OHIO, May 12, 1908.

Seriously considered, the situation in the machine tool line shows such little change over conditions that have existed for the past several weeks that it is scarecly worth denominating improvement; yet some local manufacturers would undoubtedly disapprove of this statement in its broad sense, for there has been a little break in the monotony with these, the railroads, which have been withholding orders so long, having shown a disposition to come into the market for some needed tools. A Western railroad has bought a bill of lathes, ranging from 36 to 42 in., for early delivery and approximating about $15,000, the second good sized order placed in this market this year with the same company for lathes, the other order, however, not being credited to the railroads. Aside from this and a fairly good run of orders on the books of manufacturers of special machinery, corrugating presses, metal working machinery, medium and small sized units in electric power, and a few medium and small size planers, the situation cannot be said to be any better, and, if anything, is worse. Working time is being cut to 20 and 40 hr. a week and forces are being gradually reduced, practically none but the skilled employees being retained. Returns from the surrounding manufacturing territory in the way of replies to questions propounded by *The Iron Age* indicate that the situation in the tool line is practically the same throughout; there is no buying, save for actual requirements, and such transactions are negotiated very conservatively.

The only foundries engaged are those making stoves and ranges. The jobbing foundries, such as are in operation, are running at a loss, taking off only one or two heats a week, except in rare cases, and watching carefully for any and all signs of improvement in the tool line, upon which most all the local foundries are largely dependent for their business.

Considerable interest is taken locally among manufacturers who are members of the National Association of Manufacturers in the coming thirteenth annual convention, to be held in New York on May 18, and the Cincinnati delegation is expected to be the largest in years. Articles printed in local newspapers have given the erroneous impression that delegates to this meeting would be appointed at the annual dinner of the Manufacturers' Club of Cincinnati at the Queen City Club on May 11. As a matter of fact, only members of firms which are members of the national organization could attend the New York meeting, and the Manufacturers' Club as an organization could not appoint delegates from within its membership without observing the first requirement. Among those who will attend the New York meeting are E. H. Hargrave of the Cincinnati Machine Tool Company, Thomas P. Egan of the J. A. Fay & Egan Company, C. Gordon Neff of the Bradford Belting Company, C. H. M. Atkins of the Warner Elevator Mfg. Company, J. C. Hobart of the Triumph Electric and the Triumph Ice Machine companies, Frederick A. Geier of the Cincinnati Milling Machine Company and R. A. Cowing of the Harkness & Cowing Company.

Members of the Iron Buyers' Association, which was recently formed in this territory to endeavor to bring about some reforms in contracts, methods of sale, &c., claimed to be necessary, are still agitating the matter, but so far as can be learned the new contract recently submitted to furnaces and selling agents has as yet had no signers. Selling agents are all in receipt of numerous opinions and arguments from the ironmasters, and with most of them absolutely repudiating the contract, a few holding off to get other opinions, none, so far as can be learned, has agreed to permit the use of the new form. The association is just now balloting by mail for a new president to succeed William Fetzer, resigned. The two candidates are G. H. Gorman of the Davis Sewing Machine Company, Dayton, Ohio, and George M. Verity of the American Rolling Mill Company, Middletown, Ohio.

Reports from the engineering and construction companies in this district are uniformly optimistic and indicate a better outlook for building. The Reliance Engineering Company has closed a number of good contracts, five of them for manufacturing lines. Some contemplated improvements in traction properties will also go ahead now, arrangements having been completed within the past few days.

The Concentric Engine Company, recently incorporated in Columbus, Ohio, with a capital stock of $50,000, to manufacture a new style of rotary steam engine, the invention of F. M. Lechner of that city, is installing a plant in Hickory street and expects to have its product on the market within a few months. The incorporators are Joseph Seagle, Charles J. Seagle, F. M. Lechner, A. J. Lind, George W. Molling and J. B. Karns. One of the engines has been in operation some time in the factory of the Joseph Seagle Company in Columbus, furnishing power for a large saw.

The Swink Printing Press Company, St. Marys, Ohio, organized for the manufacture of a new two-revolution cylinder printing press, is to move its business to Delphos, Ohio, where special facilities in the way of machine shop and warerooms have been secured from the Delphos Foundry & Mfg. Company. The company is buying machinery for installation in the new plant, a report giving the minimum amount as $10,000.

William Davidson and his two sons, Harry and John Davidson, of Evansville, Ind., are organizing a company in that city to erect a large plow factory. They were formerly connected with the Blount Plow Company, Evansville.

L. W. Fetzer and O. D. Kraft of Findlay, Ohio, have invented a traction oil well cleaning and pulling machine, which has been recently given an exhaustive trial and is said to have given excellent satisfaction.

Earl H. Turner, receiver of the Nutting Machine Company, Dayton, Ohio, will offer the entire property and assets, except the accounts receivable, at public auction at the company's offices in that city on May 22. A detailed list of assets is on file in the offices of Gottschall & Turner, attorneys, Beckel Building, Dayton.

An addition to the galvanized iron department of the Delphos, Ohio, can factory is being built, and a second story to the main structure will be another improvement. Plans have also been prepared for a large office building to be erected this summer.

The Vanduzen Bell & Brass Foundry Company, Cincinnati, is to reduce its capital stock from $75,000 to $15,000. The company, of which E. W. Vanduzen is the head, is one of the oldest in the manufacture of bells and chimes in this country.

Incorporation papers will soon be filed for the Acme Mfg. Company by John M. Cornish, George E. Brill, C. S. Nagel, Theodore Fischer and Ralph Talbot, all of Cincinnati. The location for the proposed plant is now being secured. The company will manufacture hardware and patented specialties, and the preliminary capitalization will be $10,000, which will be considerably increased as soon as the company gets the business well started.

## Philadelphia Machinery Market.

PHILADELPHIA, PA., May 12, 1908.

Hardly enough business has been transacted in the local machinery market to record any change in the general situation. Quietness pervades every branch of the trade, and buyers of extensive or even moderate quantities of tools are out of the market. No indications of further activity on the part of the railroads are apparent, and it is hardly believed that any improvement will be noted in this direction for some time at least. The city placed contracts for a number of small tools for equipment of the Southern and Central manual training schools, but the original list was, we understand, considerably cut. With this exception most of the business placed during the past week has been of the single tool variety. More business appears to be doing in the lighter tools. For heavy tools, however, the demand is very meager.

Inquiries are not numerous, and are still largely confined to single tool propositions. Occasional demands for two or three tools are to be noted, but in these cases it is usually the smaller tools that are wanted.

Manufacturers report no change in conditions. The demand continues of an irregular character, and but few changes have been made in the operation of plant. Competition for business is sharp, but there appears to be no disposition to cut prices on the standard lines of tools, although on the less prominent makes an occasional shading of prices is reported. Special tool makers report no improvement in the demand. In some lines there has been a trifle more business, while in others business is, if anything, a little quieter.

There has been a better export demand for some of the power transmission specialties, particularly pressed steel pulleys and hangers, which have been more active recently. In the standard lines of machine tools no improvement in the foreign demand is to be noted, although there has been a little business offered in tools for special work.

The boiler and engine trade is dull. Builders of large tools have booked but few orders recently and are catching up pretty well with the work under way. There is little demand for equipment of the medium horse powers, and that for the smaller capacities is very dull. Second-hand boilers and engines are in light demand, reflecting the general condition of the trade.

The second-hand machine tool trade is fairly good, particularly when the general condition of the market is considered. There has been a good demand for some classes of tools; others, however, are neglected. Prices are reported as being good, particularly for the better classes of tools.

Little improvement in the demand for castings is to be noted, and foundries are still being operated on greatly restricted capacities. Consumers show slight inclination to place orders for either iron or steel castings beyond their immediate needs, and foundries are for a large part dependent on week to week, and in some cases day to day, orders.

Proposals have been taken by Wm. Daniels, chairman of the Water Committee, Bridgeton, N. J., for furnishing material and making repairs to the waterworks reservoir in that city. A considerable quantity of reinforced steel and a small quantity of structural steel are required, together with nearly 1000 cu. yd. of concrete work. Bids were opened on the 11th inst., and awards are expected at an early date.

The Tropenas Steel Company, New Castle, Del., has purchased a 150 kw. Harrisburg Foundry & Machine Works engine, directly connected with Bullock generator, for power purposes in connection with its new plant. Work on the new foundry and office buildings is going forward. All the structural steel work is on the ground, and it is expected that the plant will be ready to operate early in the fall. Purchases of the machinery equipment for the plant have not yet been made.

The Philadelphia Roll & Machine Company reports a slight improvement in the demand for both sand cast and chilled iron rolls; and several orders for large rolls, particularly of the latter class, for sheet mills have been taken. There is also a somewhat better demand for charcoal iron air furnace castings, for special machinery, and some inquiry is about for special mill machinery. This concern is now running its plant five days a week, and feels more encouraged as to the future.

The Hess Machine Works, manufacturer of file making machinery and special tools, has recently booked orders for several sets of file making machines for export to England and to other countries in Europe. Five sets of these machines have just been shipped to customers in Germany, while several have been furnished file makers in this country. The plant of this concern is being operated on a basis of four and a half days a week, but if the present apparent volume of business develops into orders this time will probably be increased before very long.

The Baldwin Locomotive Works notes a material increase in the volume of orders taken during April, when compared with that which came in during the previous three months. The greater proportion of the business was confined to orders for small numbers of engines from minor railroads. Some little export business was also closed. The Baldwin Works has for some months been running on reduced working hours, with greatly reduced forces. Beginning with this week the plant was put on five hours per day, but whether this is to be continued will depend on the volume of new business coming out. A pretty fair run of repair work is reported, and the opinion is expressed that a gradual improvement in locomotive buying will be noticeable in the near future.

## New England Machinery Market.

WORCESTER, MASS., May 12, 1908.

A slight improvement in the machine tool trade is reported by some of the dealers and manufacturers, though this experience is not universal. The total of business booked is not noticeably greater, but there is a feeling that things look a little brighter. Quite a number of new concerns are establishing small works, and their inquiries and orders have had their effect. But the greater part of this business consists of second-hand tools.

New England will send its usual large delegation to the meeting of the National Machine Tool Builders' Association at Atlantic City next week. So far as can be learned the New England members are a unit for the maintenance of present prices. The dealers are not unanimous in this belief, but their arguments seem to have had little effect upon the manufacturers whose machinery they handle.

The International Paper Company has acquired the shops of the Turners Falls Machine Company, Turners Falls, Mass. The works will be devoted to the repair work for the company's several plants, and, it is understood, for the manufacture of new machinery. The works are well equipped with machinery, it is stated.

The Ideal Plating Company, 3 Appleton street, Boston, which manufactures bicycle and motor cycle specialties, and does a general plating and polishing business, has purchased a factory at Marlboro, Mass. The work of preparing the works for occupation will begin immediately, and they will be ready for occupancy July 1. The company states that it will manufacture other specialties as soon as larger facilities are available.

The J. M. Russell Mfg. Company, Naugatuck, Conn., has been incorporated under Connecticut laws with John M. Russell as president, George T. Wigmore, treasurer, and Clifford S. Russell, secretary; these officers with A. H. Dayton constituting the Board of Directors. The new name is the John M. Russell Mfg. Company, Inc. The management will be the same as when the business was conducted by John M. Russell, but the intention is to enlarge the business both in its hardware and plumbing specialties. The company also manufactures brass, bronze and composition castings.

The Carter & Hakes Machine Company, builder of machine tools, Winsted, Conn., is operating its shop on a 59-hr. schedule, manufacturing on orders.

The John T. Young Boiler Company, Norwich, Conn., has been incorporated under Connecticut laws with an authorized capital stock of $100,000. The company will manufacture steam and hot water heating boilers, and states that it will be in the market for equipment for its works. It is not yet decided whether a new plant will be erected, or some existing plant acquired for the purposes of the business. John T. Young is the president, and Augustus W. Dodge secretary of the company.

The bill providing funds for the equipment of a machine shop for the Lowell Textile School, Lowell, Mass., has become a law. The sum of $10,000 is available for the purpose.

The Massachusetts State Board of Education has asked the State for $75,000 with which to establish a manual training school at Fitchburg, Mass.

The Boston Gear Works, Norfolk Downs, Mass., is making inquiry for a cold saw to cut 6 to 8 in. round stock.

O. S. Bickford has established a machine shop at Greenfield, Mass., and will make a feature of light special machinery.

The Worcester Pressed Steel Company, Worcester, Mass., will include one or two presses of 500 tons pressure in its proposed increase in manufacturing facilities, especially in the line of heavy deep drawing of steel, mention of which has been made in this column. If two presses are installed one will be of the single action, the other of the double action type. The company is in the market for these machines, but is not yet decided on the general type which will be adopted.

The Smith & Winchester Mfg. Company, South Windham, Conn., manufacturer of paper mill, paper cutting and paper bag machinery, has purchased the business of the Elkhart Paper Bag Machine Company, Elkhart, Ind., and

is moving it to South Windham. The company states that later it will be necessary to enlarge the plant to take care of the addition to its line, but no decision has been reached as to how large a building will be required nor what machinery will be necessary for its equipment. The company is slowly making its calculations and rearranging matters so that it may know exactly what is required, and a decision may be reached in the course of the next two months. Plans may be influenced by the condition of business. The company has been very busy for the past few years, but at the present time the business is feeling the general dullness. Guilford Smith is president and treasurer; C. E. Oman, vice-president, and W. P. Barstow, secretary.

The engineering force of the transformer department of the General Electric Company has been transferred from Schenectady to Pittsfield, Mass., where the manufacture of transformers will be carried on exclusively hereafter. No new building will be undertaken this season, excepting those structures now in process of erection, which will largely increase the capacity of the works.

The Warren Steam Pump Company, Warren, Mass., continues to operate its plant on full time. This is one of the few New England concerns that has not curtailed production by shorter hours or reduced working forces during the recent months. In fact, in the 10 years of the company's existence there has never been a shutdown for vacation, and the number of employees has been constantly increasing.

The Water Commissioners of West Springfield, Mass., are to ask for a $50,000 bond issue for the improvement of the town's water system, which would include, according to the plans, the duplicating of the present pumping equipment, which consists of a 60-hp. gasoline engine and pump capable of handling 1,250,000 gal. of water each 24 hr.

The first steps have been taken toward the organization of the Enfield Power Company, which proposes to establish a hydraulic plant on the Connecticut River capable of developing 45,000 hp. for electric transmission to centers of consumption. Prominent men of the Connecticut Valley are interested in the project, which is an ambitious one. The purpose is to combine the development of water power with the scheme to make the river navigable to Holyoke, the present head of navigation being at Hartford. A dam would be built at Warehouse Point, a short distance above Windsor Locks, Conn., 38 ft. high, which would be sufficient to give a slack water pool to Holyoke of sufficient depth for river boats. The United States Government engineers have recommended a plan to make the river accessible to vessels, which comprises three locks between Hartford and Holyoke and the dredging of the rapids below the present dam that provides the necessary head for the canal that serves Windsor Locks. The new plan would include the dredging on the part of the Government and the building of a lock at the new dam. The proposed capital of $6,000,000 would include the cost of buying the privileges of the Connecticut River Company, which operates the canal to Windsor Locks, and other vested rights. The sum of $1,000,000 is estimated for electrical equipment. The plan is yet in its initial stage. Difficulties will have to be overcome, including the securing of the co-operation of the Government. A bill framed on the basis of the recommendation of the Government engineers will be presented to Congress at this session, it is understood, having received the favorable action of the Rivers and Harbors Board. Another bill, on the basis of the new plan, will be presented immediately. C. H. Tenney, Springfield, is president of the Enfield Power Company, and Ralph P. Alden, Springfield, treasurer. Alexander Clogher, New York, an engineer, is the originator of the idea.

The reopening of the Union Trust Company, Providence, R. I., after a suspension of more than six months, must have a reassuring influence on general business conditions of that city and the neighboring cities and towns. Several million dollars of deposits are released, including those of many manufacturing establishments, some of which have been more or less crippled in consequence. The company has been reorganized under a very conservative management, in which the industrial interests of the city have an important influence.

The manufacturing jewelry industry of Providence, R. I., and Attleboro, Mass., have got sufficiently in touch with the trade through their salesmen to feel confident that their season will be a very fair one, though not equalling that of last year, which was entirely beyond the ordinary. The factories have not yet felt the new influence to any great extent, though actual new business is greater than last month or March, and the feeling generally is better.

The railroad situation in New England is affected seriously by the contest going on as to the merger of the Boston & Maine system in the New York, New Haven & Hartford. It is further complicated by the decision of the Massachusetts Supreme Court last week that the holding of street railroad stocks by the New Haven road is illegal, a decision which may have its bearing upon the merger of the two railroads, it is claimed by the anti-merger element. Manufacturing concerns are deeply interested in the merger question. Many of them are served by both systems, and probably the majority of these are opposed to the change. On the other hand, there is a strong feeling that the Boston & Maine lines, which have been permitted to depreciate, would be renovated by the New Haven people in following their general scheme of improvement which has been carried out all over their system. The trade is interested, for the merger would mean a marked change in their dealings with the Boston & Maine system. Purchases would doubtless be on a much larger scale, but Boston dealers would have to sacrifice much of their share of the business if the purchasing department were concentrated at New Haven.

The local press states that the contract has been awarded for a factory to be erected in New London, Conn., by the W. D. Forbes Company, Hoboken, N. J., which, according to the report, is to remove its business to the Connecticut city. The company states that it is not yet in a position to give information on the subject. The published announcement includes the details that the shop will be located near Fort Trumbull and will be 50 x 100 ft. and two stories, with wing for a power plant 40 x 50 ft. The firm manufactures light engines.

## Government Purchases.

WASHINGTON, D. C., May 12, 1908.

The Isthmian Canal Commission will receive bids until June 2, Circular No. 441, for turbine pump and motor, duplex water pump, power hammers, pneumatic sand shaker and other supplies.

The Bureau of Yards and Docks, Navy Department, Washington, will receive bids until June 6 for one 5000 cu. ft. air compressor and accessories for the Bremerton Navy Yard.

The following bids were opened May 4, Circular No. 436, for machinery for the Isthmian Canal Commission:

Class 5.—One 15-hp. motor—Bidder 44, General Electric Company, Schenectady, N. Y., $318; 113, Wagner Electric Mfg. Company, St. Louis, Mo., $345.50.

Class 6.—One 18-in. engine lathe—Bidder 25, Compressed Air Machinery Company, San Francisco, Cal., $863.87; 34, Fairbanks Company, New York, $720; 37, Fox Bros. & Co., New York, $634; 42, Garvin Machine Company, New York, $714; 63, Manning, Maxwell & Moore, New York, $670 and $725; 90, Rahn-Carpenter Company, Cincinnati, Ohio, $650; 111, Vandyck-Churchill Company, New York, $655 and $745; 116, Niles-Bement-Pond Company, New York, $733.

Class 7.—One bench speed lathe—Bidder 6, American Wood Working Machinery Company, Rochester, N. Y., $90; 34, Fairbanks Company, New York, $56.50; 37, Fox Bros. & Co., New York, $57; 63, Manning, Maxwell & Moore, New York, $92; 111, Vandyck-Churchill Company, New York, $60.

Class 8.—One bolt cutter—Bidder 30, Detrick & Harvey Machine Company, Baltimore, Md., $1074; 32, Drew Machinery Agency, Manchester, N. H., $799; 34, Fairbanks Company, New York, $758; 37, Fox Brothers & Co., New York, $695; 38, Frevert Machinery Company, New York, $773; 63, Manning, Maxwell & More, New York, $850; 79, C. T. Patterson & Co., New Orleans, La., $780 and $830; 86, Prentiss Tool & Supply Company, New York, $698; 98, Joseph T. Ryerson & Son, Chicago, Ill., $795; 102, William Sellers & Co., Philadelphia, Pa., $1428 and $1840; 108, Tucker Tool & Machine Company, New York, $789.47; 111, Vandyck-Churchill Company, New York, $732.

Class 9.—One upright drill—Bidder 25, Compressed Air Machinery Company, San Francisco, Cal., $831.44; 34, Fairbanks Company, New York, $682.40; 37, Fox Brothers & Co., New York, $649; 38, Frevert Machinery Company, New York, $653; 63, Manning, Maxwell & Moore, New York, $642 and $495; 111, Vandyck-Churchill Company, New York, $715; 116, Niles-Bement-Pond Company, New York, $471.

Class 10.—One 24-in. shaper—Bidder 25, Compressed Air Machinery Company, San Francisco, Cal., $816.85; 34, Fairbanks Company, New York, $640 and $460; 37, Fox Brothers & Co., New York, $565 and $495; 38, Frevert Machinery Company, New York, $520; 42, Garvin Machine Company, New York, $700; 63, Manning, Maxwell & Moore, New York, $665; 79, C. T. Patterson & Co., New Orleans, La., $642; 86, Prentiss Tool & Supply Company, New York, $755; 88, Queen City Machine Tool Company, Cincinnati, Ohio, $800; 111, Vandyck-Churchill Company, New York, $575; 116, Niles-Bement-Pond Company, New York, $710 and $523.

Class 11.—One hack saw—Bidder 14, Charles Bond Company, Philadelphia, Pa., $55; 32, Drew Machinery Agency, Manchester, N. H., $48; 37, Fox Brothers & Co., New York, $53.24; 38, Frevert Machinery Company, New York, $72; 63, Manning, Maxwell & Moore, New York, $51 and $185; 98, Joseph T. Ryerson & Sons, Chicago, Ill., $80; 108, Tucker Tool & Machine Company, New York, $54.95; 111, Vandyck-Churchill Company, New York, $33.

Class 12.—One duplex emery grinder—Bidder 34, Fairbanks Company, New York, $281; 37, Fox Brothers & Co., New York, $389; 63, Manning, Maxwell & Moore, New York, $436.

Class 30.—One blower—Bidder 32, Drew Machinery Agency, Manchester, N. H., $77; 37, Fox Brothers & Co., New York, $68.50 and $49; 63, Manning, Maxwell & Moore, New York, $47.52; 74, New York Blower Company, Bucyrus, Ohio, $58; 105, B. F. Sturtevant Company, Hyde Park, Mass., $33; 122, Buffalo Forge Company, Buffalo, N. Y., $47.

The following bids were opened May 5 for supplies for the Navy Yards:

Class 341.—Three motors—Bidder 30, Crocker-Wheeler Company, Ampere, N. J., $929; 50, D'Olier Engineering Company, Philadelphia, Pa., $788; 53, Diehl Mfg. Company, Elizabeth, N. J., $610.30; 69, General Electric Company, Schenectady, N. Y., $837; 79, Holtzer-Cabot Electric Company, Brookline, Mass., $668.33; 122, Northern Electric Mfg. Company, Madison, Wis., $613; 127, Ole K. Olsen, New Orleans, La., $601.10; 149, Sprague Electric Company, New York, $667; 163, B. F. Sturtevant Company, Hyde Park, Mass., $710; 183, Western Electric Company, New York, $539.

The following bids were opened by the chief signal officer,

United States Army, Washington, D. C., April 30 for 1-kw. telephone motor:

Dean Electric Company, Elyria, Ohio, $312.87; Crocker-Wheeler Company, Baltimore, Md., $140, additional for starter and field regulator, $18; National Electrical Supply Company, Washington, D. C., $350; Holtzer-Cabot Electric Company, Brookline, Mass., $221.54; Roth Bros. & Co., Chicago, Ill., $352.

The following awards have been made for supplies for the navy yards, bids for which were opened March 3:

Vandyck-Churchill Company, New York, class 43, one extension gap lathe, $2380; class 44, one screw cutting lathe, $1092.

Potter & Johnson Machine Company, Pawtucket, R. I., class 45, one shaping machine, $686.

James Cogg, Jr., Electric Company, Louisville, Ky., class 47, one electrically driven sensitive drill, $143.50; class 48, one emery grinder, $141.

W. H. Foster Company, New York, class 49, one milling machine, $1055.

Brown & Sharpe Mfg. Company, Providence, R. I., class 50, one universal milling machine, $373.18.

Bentell & Margedant Company, Hamilton, Ohio, class 51, one mortising machine, $720.

Greenlee Bros., Chicago, Ill., class 52, one automatic cut-off saw, $732.

Niles-Bement-Pond Company, New York, class 53, one drilling machine, $1275.

Fairbanks Company, New York, class 54, five engine lathes, $5655; class 55, one patternmakers' lathe, $90.

William Sellers & Co., Philadelphia, Pa., class 56, one universal shaping machine, $1420.

Ajax Mfg. Company, Cleveland, Ohio, class 57, one bolt heading and forging machine, $3297.

Heine Safety Boiler Company, St. Louis, Mo., class 81, two 200-hp. boilers, $5388.

Under bids opened March 31 for machinery for the navy yards Vermilye & Power, New York, have been awarded class 181, one turbine blower, $1505.

The General Electric Company, Schenectady, N. Y., has been awarded class 31, one 10-hp. motor, $238, bids for which were opened April 14 for supplies for the navy yards.

The following awards have been made for machinery for the navy yards, bids for which were opened April 21:

Henshaw, Bulkley & Co., San Francisco, Cal., class 2, one flat turret lathe, $1795.

Springfield Machine Tool Company, Springfield, Ohio, class 11, one motor driven lathe, $968.

Gleason Works, Rochester, N. Y., class 132, one automatic beveled gear planer, $1550.

Tucker Tool & Machine Company, New York, class 133, one rivet spinning machine, $106.90.

Becker-Brainard Milling Machine Company, Hyde Park, Mass., class 135, one vertical milling machine, $1083.

Under bids opened April 28 for machinery for the navy yards the Becker-Brainard Milling Machine Company, Hyde Park, Mass., has been awarded class 107, one vertical milling machine, $1625.

## The Vulcan Detinning Company.

The annual report of the Vulcan Detinning Company, 157 Cedar street, New York, makes the following financial showing for the fiscal year ending March 31, 1908:

*Assets.*

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|---|---|
| Cash, cash items and inventory | $113,384.18 |
| Plants, land, tenements, patents, processes | 3,832,977.45 |
| Total | $3,946,361.63 |

*Liabilities.*

| | |
|---|---|
| Accounts payable (not due) | $56,987.85 |
| Capital stock, preferred | $1,500,000 |
| Capital stock, common | 2,000,000 |
| | 3,500,000.00 |
| Surplus | 389,373.78 |
| Total | $3,946,361.63 |
| Addition to surplus after deductions for depreciation and betterments | $15,581.04 |
| Dividends of 1¼ per cent. each paid on preferred stock, April 20, July 20 and October 20, 1907, totaled | 56,250.00 |

President Samuel R. Beardsley makes the following statement to the stockholders:

"The fiscal year just passed has been quite eventful for the company. Beginning with very promising conditions, prospects were further brightened through the final decision rendered in our favor by the Court of Errors and Appeals of New Jersey in our litigation against the American Can Company. By this decision the defendant company was permanently enjoined from using our secret process of detinning, and permission was given our company to apply to the Court of Chancery for further relief. An application is now pending before this court to compel the American Can Company to account to us for all the profits made in its detinning plants during the four years of their operation, and, furthermore, to compensate us for the damages sustained by us through its illegal use of our secret process of detinning. After the issuance of the injunction we licensed the American Can Company to continue detinning by our process for a period of six months, during which it has paid us a royalty on all material treated.

"On the other hand, the business of the company during the last eight months of the fiscal year suffered considerably, in common with the steel industry and the general metal trade, through the heavy and sharp decline in the value of our products caused by the financial crisis through which the country has just passed. Notwithstanding this adverse condition, the operation of the company during the fiscal year ending March 31, 1908, resulted, after making the usual deductions for depreciation and betterments, in a net profit of $71,152.30. Three dividends of 1¼ per cent. each were paid, amounting to $56,250, and the sum of $15,581.04 was added to the surplus.

"There is no indebtedness of whatever kind excepting for material purchased and not due. Our cash reserve has been considerably increased through the passing of two dividends. Our receipts of raw material, which, in consequence of the idleness of many factories, had been slight during the first months of 1908, have been gradually increasing since the early part of March, and both our factories have since been running full time, 22 hr. daily. The cost price of our raw material—tinplate scrap—has adjusted itself to the lower state of the market from the beginning of this year, and contracts have been made for the greater part of our requirements for the entire year of 1908 at reasonably low figures."

The Cleveland Manufacturers' Club, which was started a year ago and established a clubhouse at 1420 East Fortieth street, adjoining the East End manufacturing district, celebrated its first anniversary on May 9. During the year the club has increased its membership from 24 to 116. The following officers were elected for the ensuing year: President, W. D. Sayle, president of the Cleveland Punch & Shear Works Company; first vice-president, W. A. Comstock, secretary and treasurer of the Cleveland Wire Spring Company; second vice-president, W. F. Bilenstein, president of the National Iron & Wire Company; secretary, A. F. Schroeder, secretary of the Globe Machine & Stamping Company; treasurer, Charles F. Kurtz, secretary and treasurer of the Cleveland Store Fixture Company. These, with F. E. Pyle, W. H. Haywood and D. R. Davis, constitute the Board of Directors. J. W. Campbell is assistant secretary and treasurer.

The Associated Foundry Foremen of Philadelphia and vicinity held their regular monthly meeting in that city on the evening of May 11. The principal subject for discussion was presented by E. H. Mumford of the E. H. Mumford Company, Philadelphia, who described a new vertical mold table, which that company is preparing to place on the market. Announcement was also made regarding the meetings of the Associated Foundry Foremen to be held during the coming convention of the American Foundrymen's Association and its allied organizations, at Toronto, Canada, June 8 to 12, and it is probable that there will be a good representation of foundry foremen from Philadelphia territory.

The American Railway Association's statistics show a further increase of idle freight cars in the United States and Canada between April 15 and April 29. The total reported by 133 railroads with an aggregate freight car equipment of about 2,200,000 was 413,338 on April 29, an increase of 37,714 in two weeks. The total increase for April was 105,259 cars, and between March 15 and April 29 the increase was about 117,000 cars. In October, 1907, a shortage of about 87,000 cars was reported.

The long controversy between the Illinois bituminous coal miners and operators was ended Saturday, May 9, by the renewal of the old agreement for two years. The cost of firing the shots will fall on the miners. The mines in all of the soft coal districts are now covered by agreements, except in the Southwestern States.

A contract for the supply of 23,000 tons of steel rails for the Hamidié-Hedjaz Railway has been placed by the Turkish Government with the Sociedad de Altos Hornos of Bilbao, Spain.

# HARDWARE

FROM our Washington letter, printed on another page, our readers will learn that the bill in the interest of pure Paints has encountered unexpected objections, as there are arrayed against it practically all the great manufacturing and distributing interests of the trade. The point is forcibly made that there is no reason why Paint should be singled out for legislation of this character, which would cause even honest manufacturers of high standing a great deal of annoyance and expense and throw around the making and marketing of Paint many difficulties. The people of the country undoubtedly suffer more from the manufacture and sale of goods which are sold as "all wool," in which there is comparatively little of this material, than they do from adulterated Paints. Why not have an all wool law, say the opponents of this Paint legislation, and guard the public against shoddy and cotton mixtures? There is unquestionably a good deal of inferior Paint put on the market—and the public wants it because it is cheap—but a similar statement might be made in regard to almost every kind of manufactured product.

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In view of this fact the chief spokesman of the great body of Paint manufacturers who appeared before the Senate Committee in opposition to the bill was justified in making the point that there is no good reason for selecting the Paint business for this invidious legislation. If, however, a reform is to be undertaken in this field, the painters who compound their own Paints instead of buying them already prepared should not be lost sight of. If something could be done to compel them to buy a good quality of Mixed Paint or Lead, to use first quality materials for thinning it, and at the same time restrain them from making it too thin, it would be at least aiming at a more complete correction of the evils in question. In this connection it is significant that the argument in favor of the bill was made by an organization of the house painters from whose thin Paints of low quality the bill does not even attempt to protect the public.

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There is also force in the argument that it would be an invasion of private rights to compel manufacturers to give to their competitors and to the world their secret formulas, many of which represent much expert knowledge and years of experiment. To force them to disclose these trade secrets is open to the objection that it is in spirit, if not in letter, contrary to the constitutional provision which forbids the taking of private property without due process of law.

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It is a curious commentary on the feeling of business men in regard to legislation, national and State, that some manufacturers gave their adhesion to one or other of the pure Paint laws proposed, not because they approved of them, but because they were afraid that a more drastic law and one embodying still more objectionable features might be enacted.

## Condition of Trade.

With the approach of summer weather and the quickening of activities generally there is little change in the general Hardware situation. The same conservatism which has made the trade both in the manufacturing and distributing branches careful of their purchases still continues, and in practically every part of the country this disposition is reflected. In the agricultural sections especially, and where even the farmers' trade is an important element of the retailers' business, there is less complaint than in the cities and manufacturing towns, where a good many are out of employment or working only part time. There is as a result of current business, which is after all of fair volume compared with ordinary years, a good movement of orders when estimated by their number, and the aggregate makes a respectable total. In factories and stores, however, the handling of such orders entails much additional labor, which is the more felt as some establishments have endeavored to dispose of help which they deemed unnecessary in view of reduced volume of business. One advantage which the manufacturers especially experience in the present juncture is the opportunity they are given to weed out undesirable workmen and thus increase the efficiency of their force. This is in many cases a substantial gain, as not a little was lost in efficiency during the period of heavy pressure on their productive capacity. The course of prices in the raw material and in the finished product continues to be an engrossing topic in the trade, where the question as to the course which will be pursued by the great iron interests is canvassed with a good deal of solicitude because of its bearing on the general situation. The condition of prices along nearly the entire Hardware line, with its background of uncertainty in the raw material markets, is far from strong, but while many revisions are made from day to day prices are pretty well sustained, all things considered, and in comparatively few lines does a demoralized condition prevail. The tone of the trade is hopeful, for it is realized that a much needed process of retrenchment and cleaning up is going on, in which will be found a fitting preparation for the good times, the coming of which is looked forward to. The magnificent position of the country agriculturally, the excellent financial condition of the farmers generally, and the prospect for good crops in the near future furnish the basis for confidence that prosperity cannot be very long delayed.

### Chicago.

Cold driving storms of wind and rain, continuing almost without interruption through the week and extending over a wide extent of territory, have had a retarding effect upon trade, so that the opening days of May have proved somewhat disappointing. Some damage has been done by recent frosts and freezing weather to fruit and early plantings, but such results are usually overestimated in the beginning; at the same time the present effect is to minimize buying on the part of consumers. There is every reason to believe that the sharp drop in business that has been experienced by both retailer and jobber is but temporary, and that with the return of normal May weather conditions the lost ground will be recovered. Barring unforeseen developments the present month should at least hold even with April. Reorders for Woven Wire, Poultry Netting, Lawn Mowers and other seasonable goods, on which first orders were placed sparingly, are beginning to come out a little better, giv-

ing hope of an increasing demand of this character. The excellent prospect of a good hay crop in the Southwest has stimulated the movement of bale ties, orders for which are coming out in fair volume. Present conditions are exceptionally favorable to the development of a similar demand a little later in Northern territory. While there is no material change in nominal price schedules, some lines are quite unsettled, and even where agreed prices are being maintained on specific quotations, the low figures named on lump estimates reflect radical departures from recognized prices. This is particularly true of Builders' Hardware, in which there is eager competition for every order, large or small, that comes up. Chicago building permits for April show an increase both in number of buildings and cost over the same month last year, a fact that bespeaks future demand for building Hardware.

## NOTES ON PRICES.

**Wire Nails.**—Business keeps up to about the same volume as has been recorded during the past month, and buyers are pursuing the same conservative course in sending orders to the mills. Orders are confined to small lots which amount in the aggregate to a moderate volume. Prices are firm and regularly maintained, except as back orders come unexpectedly to light, and retail buyers in carload lots are treated as jobbers by some manufacturers. Quotations for base sizes continue as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $2.05 |
| Carload lots to retail merchants | 2.10 |

GALVANIZED NAILS continue to command about the usual advance. Taking the country at large, the business done in these goods is of course small in comparison with the volume of the ungalvanized. There is some diversity in the charge for galvanizing. Some manufacturers charge about $1 extra per keg for galvanizing 20 to 6 d., $1.15 for 5 to 3 d. and an advance of about 50 cents for 2 d. and smaller. Other manufacturers charge the same for galvanizing all sizes.

*New York.*—Demand continues comparatively light and orders are confined to small lots. Merchants are keeping very close to actual requirements in their purchases. Regular quotations are on the basis of $2.40 per keg for small lots at store.

*Chicago.*—The measure of consumptive demand is pretty accurately reflected by the orders coming to the mills, since jobbers and retail dealers are gauging their purchases very closely to immediate requirements. Owing to the severe rainstorms of the past week there has been a slight reduction in the volume of orders entered. However, the total tonnage of business booked by the American Steel & Wire Company for the first week of May is within 4 per cent. of that of the same period last year. Some diminution in the demand for Nails is looked for within the next few weeks, as the season is now well advanced. Quotations are as follows: $2.23 in car lots to jobbers, and $2.28 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

*Pittsburgh.*—A moderate volume of new business in Wire Nails is being received by the mills, but it continues to be confined to small orders for actual needs. Shipments are being made promptly by the mills, and there is no delay in deliveries. Prices are firm, and we are advised are being absolutely maintained. The new open hearth steel plant being erected by the Pittsburgh Steel Company at Monessen, Pa., the second largest manufacturer of Wire Nails, is nearing completion, and is expected to be ready for operation in July or early in August. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Carloads, to jobbers | $2.05 |
| Carload lots to retail merchants | 2.10 |

**Cut Nails.**—The situation continues without change, orders being small and demand restricted to actual requirements. Mills that are in operation are running only part time, while others are closed down altogether. The market is irregular, and concessions of 15 cents or more are being made on regular Steel Nail quotations, so that about $1.90 for carload lots at mill is more representative of the market than $2.05. Iron Nails generally should command about 10 cents more than Steel.

*New York.*—Demand for Cut Nails is comparatively light and for small lots. There are some Nails of inferior material and imperfect in form which are sold for less than regular quotations. Regular quotations are on the basis of $2.30 per keg, for small lots at store.

*Chicago.*—Few lines are more dormant and inactive than Cut Nails. Occasional orders for stock assortment are all that are being placed by jobbers, and the demand from consumers is limited to small orders of a few kegs at a time. Market conditions are such as to invite price concessions, which are quite generally being made to the extent of 10 cents or more. Chicago quotations are nominally as follows: Iron Cut Nails, carloads, to jobbers, $2.23; to retailers, $2.28; Steel, to jobbers, in carloads, $2.03; to retailers, $2.08.

*Pittsburgh.*—Orders continue very light and are only for small lots for actual needs. Some of the Cut Nail mills are operating to 30 or 40 per cent. of capacity, while others are shut down, and every effort is being made by the mills to prevent accumulation of stocks, while present dull demand lasts. Regular prices on Cut Nails are being shaded 15 cents a keg or more. We quote Steel Cut Nails at $1.90 to $1.95, f.o.b. Pittsburgh, for carload lots, and about $2 for small lots, to which freight to point of delivery is added. Iron Cut Nails are about $2.05, at maker's mill.

**Barb Wire.**—A fair volume of business continues a feature of the Barb Wire market, in which there are small but rather frequent orders. The volume does not correspond very favorably with that of last year, but is more encouraging than in other lines of Wire products. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.20 | $2.50 |
| Retailers, carload lots | 2.25 | 2.55 |
| Retailers, less than carload lots | 2.35 | 2.65 |

*Chicago.*—Barb and other forms of Fencing Wire continue to be the most active of the various lines of Wire products. New business is coming in freely from northern territory where the farmers are not yet wholly occupied with seeding operations. Small but frequent orders are the rule which is being rigidly observed by all buyers, large and small, and the indications are that the season will close with but very small stocks in the hands of distributors. We are advised that no departures from regular prices are being made by the mills. We quote as follows: Jobbers, Chicago, car lots, Painted, $2.38; Galvanized, $2.68; to retailers, car lots, Painted, $2.43; Galvanized, $2.73; retailers, less than car lots, Painted, $2.55; Galvanized, $2.85; Staples, bright, in car lots, $2.35; Galvanized, $2.65; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

*Pittsburgh.*—A fair volume of new business is being entered by the mills, while shipments on specifications against contracts placed some time ago are fairly heavy. Tonnage so far this year in Barb Wire is somewhat less than in the corresponding period last year. Fence building by the farmers is pretty well over, and it is probable demand for Barb Wire will soon show a falling off. The mills advise us that regular prices are being maintained. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | Painted. | Gal. |
|---|---|---|
| Jobbers, carload lots | $2.20 | $2.50 |
| Retailers, carload lots | 2.25 | 2.55 |
| Retailers, less than carload lots | 2.35 | 2.65 |

**Plain Wire.**—Specifications on contract orders are being received in fair volume by the mills, and a moderate volume of new business is being placed. Small orders characterize the present situation. Prices are reported as being maintained. Quotations per 100 lb. to jobbers in carload lots are as follows, f.o.b. Pittsburgh, 60 days, or

2 per cent. discount for cash in 10 days, the price to retailers being 5 cents additional:

| Nos. | 6 to 9 | 10 | 11 | 12&12½ | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|
| Annealed | $1.90 | 1.95 | 2.00 | 2.05 | 2.15 | 2.25 | 2.35 | 2.45 |
| Galvanized | $2.20 | 2.25 | 2.30 | 2.35 | 2.45 | 2.55 | 2.95 | 3.05 |

*Chicago.*—A fair amount of new business is being entered by the mills the bulk of which is coming from Fence manufacturers, for whose product the demand is reasonably active. Makers of Wire specialties, however, are buying sparingly. There is no change in the general character of requirements, they being for small lots for prompt shipment. Prices are being firmly maintained. Quotations are as follows: In car lots, to jobbers, $2.08, f.o.b. Chicago, and to retailers, $2.15.

*Pittsburgh.*—A moderate amount of new business is being placed, while specifications against contracts are coming in at a fairly satisfactory rate. Tonnage in Fence Wire so far this year has been somewhat less than last year, the trade pursuing the policy of buying small lots for actual needs, but are placing orders more freely than was the case last year. The mills are able to make prompt shipments on all orders, and we are advised prices are being held. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

| | |
|---|---|
| Jobbers, carload lots | $1.90 |
| Retailers, carload lots | 1.95 |

**Rope.**—The improvement in demand is so slight that it is difficult to say what the increase in volume amounts to. Requirements are much below normal, and the trade continue to order on the hand to mouth basis. The price of Manila Rope is about ½ cent lower than recent quotations have indicated. The following quotations, for base sizes, fairly represent the market for small lots, but are not always adhered to on large orders: Pure Manila, 10¼ to 10½ cents; lower grades Manila, 8 to 9 cents; Pure Sisal, 7½ to 8 cents; lower grade Sisal, 6½ to 7 cents; No. 1 Jute, ¼-in. and up, 6¼ cents; No. 2 Jute, ¼-in. and up, 5¾ cents.

**Wire Picture Cord.**—There is undoubtedly a great deal of Wire Picture Cord of short length being sold at the present time, and it will be well for merchants to be on their guard against it. Those desiring to purchase full length goods of standard manufacturers will naturally be obliged to pay a somewhat higher price than for goods marked 25 yards but containing less. While full length goods are represented in a general way by discount of 90 per cent., those containing irregular lengths can be purchased for about 20 per cent. less.

**Lace Leather.**—The improving tendency in the Hide market is reflected in a slight but quotable advance in prevailing quotations on Belt Lacing. The market on Cut Lace is now represented by a discount of 50 and 10 per cent., and on Sides by quotation of 22 to 23 cents per square foot.

**Cast Washers.**—The demand for Cast Washers is light, and many manufacturers have reduced their production on this line to the minimum. Cast Washers are not handled to a large extent by the Hardware trade, but are in demand when any considerable amount of railroad structural work, bridge building, &c., is going on. The market price at the present time may be represented by quotation of 1½ to 1¾ cents per pound.

**Picks, Mattocks, &c.**—Some manufacturers of heavy tools, such as Picks, Mattocks, Crow Bars, &c., are said to be making moderate concessions on some lines. In a general way, however, it may be stated that prices on these goods have been surprisingly steady in view of the conditions and the light business to be had.

**White Lead in Oil.**—Continued advances in the price of Pig Lead have had the effect of strengthening the market on Lead products. The market for White Lead in Oil is very firm, and buyers are unable to obtain concessions on regular prices, as might have been possible some time ago. The improvement in demand is quite pronounced, though orders are for moderate lots. Quotations are as follows: In lots of 500 lb. and over, 6¾ cents per pound; in lots of less than 500 lb., the usual advance of ½ cent is charged.

**Linseed Oil.**—An advance of 1 cent per gallon has been made by crushers in the price of Oil as a result of the advancing seed market. The market is firm at the advance, but no desire to purchase more freely on account of higher prices has developed. Heretofore the trade has ordered what it has required, without regard to price, which has also been true of manufacturing consumers. Local quotations are as follows: State and Western Raw, 41 to 43 cents; City Raw, 43 to 44 cents per gallon. Boiled Oil is 1 cent per gallon advance on Raw.

**Window Glass.**—Conditions remain about the same as for the past few weeks, while factories making Glass have experienced a slow market and low prices. Demand shows no improvement, and the majority of manufacturers are supposed to be having difficulty in finding purchasers even at lower prices. In a number of instances manufacturers have sacrificed quality for quantity, so that an unknown proportion of the Glass on the market is inferior in quality. Demand is very light and prices irregular, so much so that it is impossible to name quotations which would represent the market.

**Spirits Turpentine.**—Prices have fluctuated during the week to the extent of ½-cent per gallon at this point, reflecting conditions at Savannah. The receipts of the new crop have been heavy in the Southern market and demand light, causing the price to fall off ½-cent from last week's quotation. Later in the week the market recovered what it had lost, because of lighter receipts and better demand. Demand at this point has been of a hand to mouth character, despite the low price. The New York market is represented by the following quotations: Oil Barrels, 46 to 46½ cents; Machine Made Barrels, 46½ to 47 cents.

**Paris Green.**—The Paris Green market continues quiet and without interesting features. A limited quantity of Green was ordered previous to the announcement of prices, and since that time buyers have not appeared anxious to anticipate their wants to any great extent. This is in accordance with the policy generally being pursued in regard to other lines of goods. Quotations are without change, as follows:

| | Arsenic kegs. | 175 lb. | 28-56 lb. | 2 & 5 lb. | Boxes. 1-lb. | Boxes. ½-lb. | Boxes. ¼-lb. |
|---|---|---|---|---|---|---|---|
| 10,000 lb. and over | 21½ | 22 | 23 | 23½ | 24½ | 25½ | 26½ |
| 5000 to 10,000 lb. | 22 | 22½ | 23½ | 24 | 25 | 26 | 27 |
| 1000 to 5000 lb. | 23 | 23½ | 24½ | 25 | 26 | 27 | 28 |
| 500 to 1000 lb. | 24 | 24½ | 25½ | 26 | 27 | 28 | 29 |
| Less than 500 lb. | 25 | 25½ | 26½ | 27 | 28 | 29 | 30 |

**Coil Chain.**—The market for Coil Chain, which has long been in an unsettled condition, continues decidedly irregular. Although present prices are said to be close to cost, the tendency apparently is still downward, some producers having recently put out lower quotations. There is very little business doing, and competition for any orders in sight is exceedingly keen.

**Sash Weights.**—Quotations on Sash Weights are somewhat irregular, weakness having developed in some sections where prices have formerly been fairly well maintained. In the East low figures have been mentioned for a considerable period, the market level being about $21, except in New England, where better prices are obtained. In the Central and Western districts quotations have recently dropped a dollar or two a ton, and weakness in Southern territory is even more acute, verging on demoralization. A price of $22 may be named to represent the market in the West, and perhaps $21 in the South.

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THE BRITISH COLUMBIA WHOLESALE HARDWARE ASSOCIATION at its annual convention at Vancouver last month changed its name to the Hardware and Metal Association of British Columbia. The officers elected for the coming year are: John Boyd (Boyd, Burns & Co.), Vancouver, president; J. A. Cunningham (Cunningham Hardware Company), New Westminster, vice-president; John Burns, manufacturers' agent, Vancouver, secretary-treasurer.

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S. E. DRAKE COMPANY, Lexington, Ky., has incorporated with a capital of $10,000, to conduct a Hardware, Implement, Vehicle and Paint business.

## COMING HARDWARE CONVENTIONS.

GEORGIA ASSOCIATION, Indian Springs, May 19, 20, 21. Secretary, Gary Vinson, Waynesboro.

ALABAMA ASSOCIATION, Montgomery, May 28, 29. Secretary, L. G. Smith, Ensley.

AMERICAN HARDWARE MANUFACTURERS' ASSOCIATION, Hot Springs, Ark., June 9, 10 and 11. Secretary, F. D. Mitchell, 309 Broadway, New York.

SOUTHERN HARDWARE JOBBERS' ASSOCIATION, Hot Springs, Ark., June 9, 10 and 11. Secretary, C. E. Kersey, Richmond, Va.

ARKANSAS ASSOCIATION, Hot Springs, June 9, 10 and 11. Secretary, Chas. E. Taylor, Little Rock.

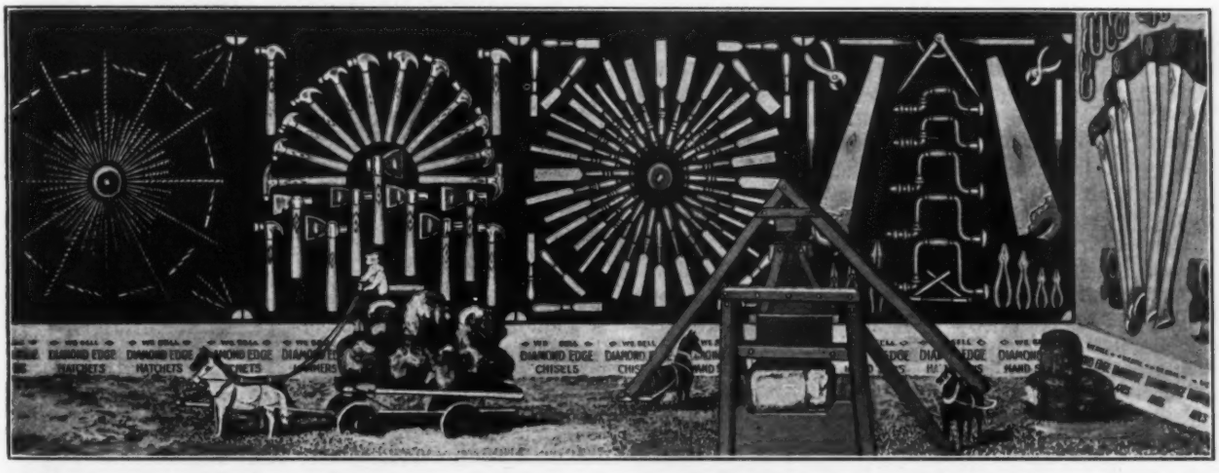
CAROLINAS ASSOCIATION, Wrightsville Beach, N. C., July 8, 9, 10. Secretary, Paul W. McLure, Greenwood, S. C.

OKLAHOMA ASSOCIATION, Oklahoma City, July 14, 15 and 16. Secretary, D. C. Patterson, Oklahoma City.

MICHIGAN ASSOCIATION, Detroit, August 13, 14, 15. Secretary, A. J. Scott, Marine City.

## Window Display of Tools.

THE accompanying illustration reproduces a special tool window display, installed by Kyle Chandler, an enterprising Hardware merchant in West Point, Miss. The occasion of the display was a cotton carnival, and the layout must certainly be regarded as highly appropriate. The floor of the window which is 15 ft. long and 4 ft. deep was covered with Cotton Seed. On the right hand side will be observed an old-time Compass Cotton Press, while on the left is a two-horse wagon loaded with seven bales of cotton. At the back and sides of the window are large sample boards, artistically arranged showing elaborate assortments of the brand of tools carried by the firm, the name being prominently featured by signs extending around the base of the sample boards.




*A Window Display During Cotton Carnival.*

## Philadelphia Hardware Lunch Club.

THE HARDWARE LUNCH CLUB, Philadelphia, Pa., composed of a number of those prominently engeged in the wholesale Hardware trade in that city, held its eighth annual shad dinner at The Orchard, on the Delaware, Essington, Pa., Saturday, on the 9th inst. Thirty-five members and guests participated and a very enjoyable afternoon was spent. Wm. B. Charlton and Frank G. Drew had charge of the arrangements and their efforts were most successful. Among those present were the following: W. P. M. Braun, Francis J. Braun, Jas. S. Bonbright, Pennsylvania Lawn Mower Company, Philadelphia; H. B. Lupton, vice-president Oliver Iron & Steel Co., Pittsburgh; A. W. Stanley, Robt. N. Peck, Stanley Rule & Level Company, New Britain, Conn.; H. S. Leonard, Frank G. Drew, Winchester Repeating Arms Company, New Haven, Conn.: John L. Clayton, J. H. Van Newkirk, John Allen, Russell & Erwin Mfg. Company, Philadelphia; Chas. Ressinger, Franklin Hardware Company, Franklin, Pa.; E. F. Morse, A. J. Le Jambre, Morse Elevator Works, Philadelphia; T. B. Hendrickson, Reading Hardware Company, Philadelphia; Paul A. Griffith, Shields & Bro., Philadelphia; W. M. Brownback, A. S. Kille, John H. Connarrve, E. R. Vernier, Yale & Towne Mfg. Company, Philadelphia; Jos. Droescher, S. R. Droescher, New York City; Fred Allen, Cusack & Allen, Philadelphia; S. S. Reckefus, *The Iron Age*, Philadelphia; Daniel Stern, *American Artisan*, Chicago; N. A. Petry, Philadelphia; L. V. Wolf, Star Lock Works, Philadelphia; Jos. H. Grubb, Philadelphia; Jas. D. Green, Frank W. Huff, Geo. Spence, N. F. Cressman, N. D. Perine, F. R. Hall, Wm. B. Charlton, Walter S. Cook, John W. Weibley, Supplee Hardware Company, Philadelphia.

## Trade Items.

H. G. OSBORNE has moved from 19 Park place to 74 Cortlandt street, New York. He is manufacturing in different diameters Shell Extension Brick and Stone Drills, threaded for screwing to an end of gas pipe, suitable in diameter, for drilling through brick, stone or concrete walls any thickness.

THE SPERRY & ALEXANDER COMPANY, and Robert Ogilvy, have jointly taken the store and two basements at 20 Warren street, New York, which they will occupy as they did similar premises at 300 Broadway. The Sperry & Alexander Company carries in stock assortments of Hardware, Cutlery, Manicure Specialties and Photographic Supplies, and were at the former location 10 years. Robert Ogilvy had been at the Broadway address since 1873, with the exception of nine months, during which a new building was in course of erection on the same site, into which he moved on completion. Mr. Ogilvy imports and wholesales Fishing Tackle, some kinds of which he manufactures also himself. The new premises are much larger, better lighted naturally, and with the fine new front and other improvements will add much to the business facilities of both houses.

S. F. HAYWARD & Co., handlers of Fire Fighting Supplies of all kinds, have removed from 20 Warren street to 39 Park place, New York, where they have the entire store floor and two basements.

THE CASSADY-FAIRBANK MFG. COMPANY, Chicago, has bought out three factories making Hardware specialties, and will move their tools, stock, &c., to the Chicago plant, where manufacturing will be continued on a larger scale. The factories purchased were the Foyer Mfg. & Steel Stamping Company, Painesville, Ohio; Chas. C. Bonar & Co., Evanston, Ill., and the stamping department of Bergman Bros., Buffalo, N. Y.

W. T. Matters Hardware & Vehicle Company, Neosho, Mo., has been incorporated with a capital of $10,000, to conduct a Hardware, Stove, Sporting Goods, Harness and Vehicle business.

## Impressions of San Francisco.

GEORGE H. SARGENT, president of Sargent & Co., who has just returned from a two months' visit to the Pacific Coast, including Los Angeles, Pasadena, Santa Barbara, Monterey and San Francisco, was particularly impressed with what he saw of the new San Francisco in the 10 days he was there. In the rebuilding programme the effort has been principally confined to office and public buildings, hotels, &c., and there is comparatively little of renewal in the residential districts. Mr. Sargent said that standing on Market street and looking uptown reminded one of Broadway from the Post Office to the Battery, the buildings which are being erected are so imposing and substantial. He said it was surprising to see what had been done in two years, considering the multitude of difficulties which had to be surmounted. San Franciscans are proud of what they have done, are glad to have visitors come out and see what has been accomplished and are now looking forward with confidence and satisfaction to the future. Mr. Sargent said that California generally is in fine condition, with good prospects in regard to crops.

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James D. Fleming, vice-president of the Lalance & Grosjean Mfg. Company, who returned recently from a business trip to San Francisco and Los Angeles, expresses himself as astonished at the visible progress undeniably made as a result of the two years' work since the destruction of the city, April 18, 1906. In his opinion a correct judgment of the rebuilding and other work accomplished can best be formed by persons who were in San Francisco immediately after the disaster, actual knowledge of which only affords a basis for intelligent comparison with present conditions. Mr. Fleming had seen the city a week after the conflagration, and judging by actual results accomplished in spite of fire insurance troubles, building and other strikes, scarcity of building materials for a great portion of the interval and other discouragements, he believes that in five years San Francisco will be one of the finest of American cities and in ten years some of its inhabitants will have come to regard the fire as a blessing in disguise. Everything is new and modern, the structures being of the most substantial character, built in the light of past experience, with foundations of the best construction and all in accordance with the new and strict building laws, a feature of which is the temporary duration of the emergency buildings put up for immediate use. Chinatown and other undesirable quarters were swept away, thus permitting a fresh start. Not a man was encountered who talked blue, every one apparently being up and doing with bright hopes for the future. Mr. Fleming says the people as a body are entitled to great credit for the stupendous task accomplished so far in the face of great discouragements, and attributes the great work done to an energetic, self-reliant and indomitable determination to surmount the misfortune.

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THROUGH a committee appointed for the purpose the Missouri Retail Hardware Association has adopted resolutions relative to the recent death of William H. Hahn of the William H. Hahn Hardware Company, St. Louis, a former president of the organization. These resolutions indicate the high esteem and regard in which Mr. Hahn was held by the members of the association, in the affairs of which he had occupied a prominent place for a number of years.

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J. T. JOHNSON, Kingston, N. Y., whose establishment was recently destroyed by fire, has secured quarters in another building which he will occupy until his new building, which is being erected on the old site, is ready. His retail department is already open, and by the 18th inst. it is expected to have the wholesale end of the business running.

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THE NANZ CLOCK COMPANY, manufacturer of Watchman's Time Detectors, has removed its office, salesroom and repair shop from 127 Duane street to 178 Fulton street, New York.

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# PARCEL POST AND PAINT LEGISLATION AT WASHINGTON.

FROM OUR SPECIAL CORRESPONDENT.

WASHINGTON, D. C., May 12, 1908.

THE Senate Post Office Committee has reported the annual post office appropriation bill free and clear of all parcel post or other features objectionable to the retail interests of the country. The outcome is believed to be due to the exceedingly energetic campaign conducted by the organization of retailers in the leading trades, including especially the Hardwaremen, the grocers and the druggists, who have stood shoulder to shoulder throughout the winter in opposing the populistic projects urged upon Congress by the Postal Progress League, the representatives of the mail order houses and the National Grange, Patrons of Husbandry.

### Parcel Post Amendments Very Unlikely.

The bill will be taken up in the Senate in a few days, where, of course, an opportunity will be afforded for the presentation of parcel post amendments, but inasmuch as the point of order that new legislation can be added to an appropriation bill only by unanimous consent, will lie against all such propositions and will undoubtedly be urged, there is little prospect that the bill will be modified in this direction. In any event the conferees on the part of the House, who will include Chairman Overstreet and the two ranking members of the House Post Office Committee, will refuse to accept parcel post amendments and their ultimate rejection therefore seems certain.

### Senate Recommends $4,000,000 Increase in Cost of R. F. D. Service.

The bill as reported to the Senate increases the already enormous appropriation for the rural free delivery service from $35,573,000 to $39,303,685, an addition to the burden of the taxpayers of nearly $4,000,000 per annum. This addition is made to cover an increase in the maximum annual salary of rural carriers from $900 to $1000. As the number of carriers in the service will approximate 40,000 before the end of the coming fiscal year, an increase of $100 per annum in salary represents a sum greater than the entire cost of the rural service during the early years of its existence. This increase in carriers' salaries is believed to be subject to the point of order, and even if adopted by the Senate must run the gauntlet of the Conference Committee.

### Mass Meeting a Fizzle.

The "mass meeting" set for Tuesday, the 5th inst., and designed to concentrate pressure for parcel post legislation upon Congress at a time when the annual Post Office Appropriation bill was under consideration, proved to be a complete fizzle. Notwithstanding the fact that a large number of invitations were sent out under the official frank of a New England Congressman, only a corporal's guard could be mustered in a parlor of a local hotel when the meeting was called to order. The Postmaster-General, who was widely advertised to address the meeting, was "unable to be present, owing to an important social engagement." Even the authors of the Parcel Post bills pending in the House and Senate found their public duties so pressing they could not be present, and the only "representatives of an enlightened public sentiment" who attended were the officers of a few subordinate labor unions and farmers' organizations.

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### Legislation on Paint Opposed.

The movement looking to the enactment of a Federal honest Paint law has received a decided check as the result of a hearing granted by the Senate Committee on Manufactures, on the 8th inst., to more than a score of prominent representatives of the Paint trade. Despite the fact that an understanding was reached on the occasion of the recent hearings before the House Committee on Interstate and Foreign Commerce, between the representatives of all the prominent organizations in the Paint trade and Congressman Marshall, the author of the pending House bill, upon a modified measure subsequently introduced and almost identical with the Senate bill presented by Senator Heyburn, chairman of the Committee on Manufactures, all the Paint men present at the hearing on the 8th inst., with the exception of the master painters, vigorously opposed all Federal legislation, and especially that feature of the Marshall and Heyburn bills which requires the label on the unbroken package to show the ingredients of the goods.

The square reversal of position on the part of the Paint manufacturers was frankly conceded by them, and was attributed to "more careful deliberation," and to the discussion of the question of Paint legislation which took place at a trade conference held at Cleveland on the 28th ult. The result of the hearings before the Senate Committee on the campaign for a Federal honest Paint law cannot be accurately gauged at this writing, but if the Senate Committee decides to report a measure at the present session it is probable that it will not contain any provision requiring manufacturers to place formulas on their labels.

### Many Protests Made.

Senator Heyburn's purpose in presenting an honest Paint bill in the Senate in advance of the passage of the Marshall measure in the House was to provide for the simultaneous consideration of the subject in both Houses with a view to expediting legislation. His bill followed so closely the revised Marshall measure, which was understood to have received the practical indorsement of the trade at large, that he was not prepared for the numerous protests against the bill, which were received by the committee soon after its introduction and reference.

The only advocates of the Heyburn bill in attendance at the hearing were Messrs. John Dewar, chairman of the Legislative Committee of the International Association of Master House Painters and Decorators; Robert L. Peters, Richmond, Va., and Charles Macnichol, Washington, D. C., members of the same committee. The delegation appearing in opposition to the bill included George L. Gould, Gould & Cutler, president of the National Oil, Paint and Varnish Association, and also representing the Paint and Oil Club of New England; Benjamin Moore, Benjamin Moore & Co., representing the Eastern Paint Manufacturers' Association; G. B. Heckel, secretary of the Paint Manufacturers' Association of the United States, and also representing the Eastern Paint Manufacturers' Association; Richard H. Lersner, Charles M. Childs & Co., representing the Paint, Oil and Varnish Club of New York, and the Legislative Committee of the Eastern Paint Manufacturers' Association; Arthur S. Somers, Fred L. Lavanburg, dry color manufacturer; W. B. Kilpatrick, National Paint Works; Harry Lauderbaugh, Lauderbaugh & Co.; Henry C. Stewart, S. P. Wetherill Co., representing the dry earth Paint industry; N. B. Arnold, president of the Varnish Manufacturers' National Association; R. S. Leonard, Glidden Varnish Company; Robert Cathcart, Atlantic Refining Company; Jerome W. Frank, Standard Varnish Works; H. P. Stephenson, Berry Brothers; Samuel K. Felton, Felton, Sibley & Co.; B. H. Shoemaker, Jr., Robert Shoemaker & Co.; Edward T. Longstreth, S. H. French & Co.; Samuel B. Bowen, Pecora Paint Company, and Howard E. Yarnall, H. E. & D. G. Yarnall.

### Position of the Paint Manufacturers.

After the arguments put forward by the advocates of the Heyburn bill had been stated by Mr. Dewar, the views of the Paint manufacturers were set forth at length by President George L. Gould of the National Paint, Oil and Varnish Association, and by other members of the delegation. They are fairly reflected in the following extract from Mr. Gould's address:

I am placed in rather a peculiar position here. What Mr. Dewar has stated is partly true in reference to the stand taken by the National Paint, Oil and Varnish Association at the meeting last fall in Cincinnati, but this action related entirely to State legislation and not at all to national legislation. The bill, which was presented by the Joint Conference Committee, was recommended for adoption by the convention as an improvement upon any bill which had been presented before the various States in the West; and the understanding was that such legis-

lation was only to be pressed when there seemed to be a demand in the various States for legislation and for fear that worse legislation might be offered and enacted.

Since the recommendation of the Joint Conference Committee was adopted by the National Paint, Oil and Varnish Association, there has been a decided change in the views of the members of that association, as was fully developed at a joint conference held in Cleveland on Tuesday, the 28th ult. I want to state here that no one has authority to pledge the National Paint, Oil and Varnish Association for the Heyburn bill or for any national legislation, and if a vote were taken to-day I am positive the association would be decidedly against any federal legislation along the lines of the Heyburn bill.

We see no reason whatever for selecting the Paint business for such invidious legislation to the exclusion of all other lines, with the exception of such articles as affect the health and lives of our people. Furthermore, it is, in our opinion, an invasion of private rights to compel manufacturers to give to the world their secret formulae when no exigency as regards public safety requires such action. We object further, because it does not really protect house owners against unscrupulous painters who will be allowed under proposed legislation to use anything they may wish without being called to account, as the bill deals only with interstate shipment in unbroken packages.

Upon the conclusion of the hearing, Chairman Heyburn announced that several days would be allowed parties not present to submit their views in writing, after which the committee will take up the bill in executive session.

## THE CLERK AND THE SHOW WINDOW.

A PAPER BY H. W. BEEGLE, CHICAGO, ILL.

THE large Hardware merchant must depend considerably on his assistants in the matter of carrying on the details of the store. That being the case the selection of assistants should be made so as to relieve the merchant of the greatest amount of detail work. The first of the details that can be most easily shifted is that of caring for the books. The last of the responsibilities to be shifted should be those of selling, buying and advertising, for it is the proprietor who must outline the policy and give his individuality to his business. Like attracts like and you get the kind of customers you work for. With the proper system in vogue your absence from the store, whether on a vacation or by reason of sickness, will never be a catastrophe.

**Endeavor to Look at Your Assistants**

through the eyes of your customers. No clerk should be retained whose unfortunate disposition or unhappy manner is calculated to drive trade away. Probably the first gauge that should be placed on the personality of the clerk is that of reliability and by the gradual process of eliminating those who work and do not think and also those who think but do not work, you will gradually get a corps of assistants who both think and work. With all of us hard work disguised under the name of play is much more attractive.

**Business a Very Interesting Game.**

You and your assistants should look at your business as a very interesting game, which is to be played with due adherence to the rules of square dealing and honesty, but is to be played with enthusiasm from start to finish. Even if you may lose one of your men when he becomes most valuable to you it is well worth the while to get him in the habit of thinking. From his collar down a man is never worth over $1.50 per day to you. What more he is worth depends upon what is above his collar. Supplement his own originality with the good things he can learn from trade journals.

**A Bulletin Board**

on which is posted short, descriptive matter of all new goods that come into the store and any other special news, as well as a clipping of your ad. from the newspaper, is a quick and inexpensive means for getting information before your assistants. Instructing your clerks by these methods, also by having salesmen of whom you buy goods inform them as to their special merits will be effective in multiplying your own abilities in the person of each of your helpers. The clerk must know your goods in order to be able to do justice to you. None but wooden men never make mistakes. Encourage the boys to attempt new things in the store and window. Before looking inside of the window let us look at the outside.

**The Front of the Store Is Seen More Than the Inside.**

Many store fronts to-day are little less than "crazy patchwork" billboards for the signs of people who want their goods advertised, yet do not want the expense of paying for the billboard. Many Hardwaremen have inadvertently loaned the most valuable part of their store to advertise goods that are on sale in a competitor's place. Frequently the very multiplicity of the signs defeat the intended purpose. There is a limit to what the mind can take in. What if the eye does see, if the mind does not grasp. You pay the cost of the building and you should seek yourself to get the benefit. It is you, yourself, your own goods, your own name, your own personality, that should be brought to the attention of the public.

For your store front two permanent signs are allowable, the one giving your name and the other your business. Do not bury them by signs advertising some one else unless he pays you for the space. Moths and mankind are attracted by light. Make the front of your store a bright spot at night. If you can have a novelty as an attraction so much the better. Remember you cannot get people inside if they are not first attracted to the outside.

**Figure That Your Show Windows Are Worth One-Fourth the Value of Your Store Space**

and make them earn it. It is not a museum for displaying monstrosities—it should never be an aquarium unless you are advertising Fishing Tackle—it should never be a Squirrel Cage unless advertising Sporting Goods—a mineral display, unless advertising Picks and Shovels. The success of a window is not in how much attention it attracts, but in how many goods it will sell. Make the window talk, but make it talk for you.

**The Window Demonstration**

is the up to date effective way to utilize the window, and will pay in any town of over 1000 population. Generalities in the window must be avoided, the same as they must be avoided in talking. No man ever entered your store to buy simply Hardware—that is any old kind of Hardware. When a man comes in to buy he wants something of a specific sort, a Saw or a Lock. So in talking your goods be specific, do not talk merely of your large line of Cutlery, but talk of a Knife and show its special merits. This is true in window dressing—what is everybody's business is nobody's business.

**There Is Perhaps One Man About Your Store**

who is ambitious to do things who will take pride in his window work. It may be that he is only the stock boy—give him a trial on the window.

The trade journals are to-day overflowing with suggestions and illustrations of good window trims. If he has the will he can make a success of your window. If he does not, find some one who can. When you find the right man, let it be considered his work to see that proper changes are made at proper times in the window. Follow the needs, not the whims of your people. Active, courteous clerks and convincing windows will be your main aids in winning the game.

BUTLER BROTHERS, wholesalers of general merchandise, have leased spacious quarters at both San Francisco, Cal., and Omaha, Neb., for extensive sample displays, which will be opened up about July 1. At San Francisco they have taken two floors, each 77 x 100 ft., in the new building at the corner of Mission and Second streets. At Omaha they have rented the entire ground floor at 1108 and 1110 Howard street, which is splendidly lighted and adapted for display purposes. In both cities the showing of holiday goods will be complete, exactly the same as in the company's houses in New York, Chicago, St. Louis and Minneapolis, and the display of general merchandise will be impressively large. As in all their sample displays, each article will be marked with a tag showing its price in plain figures, and the samples will be shown in a compact way, making it possible for the buyer to get over a lot of ground in little time.

# Export Topics.

## IMPORTANCE OF FOREIGN TRADE.

BY A MANUFACTURER.

**First Article.**

DURING periods of business depression in domestic markets, interest in the possibilities of export trade is greatly increased. Many manufacturers pursue the wise policy of constantly extending their interests in foreign markets even though the demands of the home trade during favorable periods yield them a satisfactory business. This policy of increasing trade opportunities provides against the necessity of any radical decrease in production, and the resultant loss of profits, during periods of temporary depression in some market; it also enables manufacturers to continue the production of articles at a desirable profit, when the competition in older established trade prohibits the necessary profit.

**Making a Start.**

The present business conditions are causing manufacturers who have not previously given export trade serious consideration, to investigate. To some, the question of how to obtain a start appears very difficult, but the writer's export experience of 10 years justifies the statement that the primary methods of seeking export trade need be very little different from those employed at home. As a rule, an article which finds ready sale in the United States can be successfully sold at a profit in other markets. The question of whether the article is low or high priced need have no serious bearing upon the result; in some market, a profitable trade can be developed if the proper methods are employed.

**Government Information.**

The development of the Bureau of Manufactures, Department of Commerce and Labor, at Washington, during recent years, enables manufacturers to obtain reliable and detailed information regarding the opportunities for business in and the shipments of the various countries of the world. United States Consuls throughout the world are constantly making detailed reports of trade opportunities. From this source can be obtained a general idea of which countries afford the best markets for any manufactured article, especially if a study is also made of the habits and customs of the people.

**Trade Journal Co-operation.**

Communication with leading trade journals published in the United States and circulated in foreign countries, will result in practical information of great value, as these journals maintain representatives abroad and conduct a very thorough bureau of information for the benefit of their advertisers.

The first step usually taken in seeking foreign trade is through advertising. The expenditure necessary is comparatively small, and in addition to the merits of an article being displayed throughout the world, frequently in various languages, the publishers of trade journals give advice, lists of foreign buyers, &c., that are of great value. Replies to advertisements are usually made by the larger merchants, as small or isolated business houses rarely interest themselves in trade journals or attempt to communicate direct with distant manufacturers. Advertising the writer purchased early in his export experience brought an inquiry from a thoroughly desirable merchant and established a connection which resulted in the merchant purchasing over $30,000 worth of goods within five years. A number of other large orders were obtained. Advertisements in leading journals are also desirable, for the reason that these journals are forwarded to United States Consuls, who use them as books of reference.

**Traveling Representatives.**

Students of export trade agree that the most effective method of obtaining results in the shortest time is to send traveling representatives into the foreign field and supplement their efforts by liberal advertising. The smaller manufacturers can obtain this representation through salesmen who are successfully acting as manufacturer's agents representing a number of nonconflicting lines. Some representatives of this class have headquarters in New York City, and make frequent trips into various foreign countries. Naturally, a salesman direct from the factory secures the best results. There is not the handicap in foreign traveling that is supposed to exist. The writer sent his best domestic salesman through Europe recently. The salesman had never traveled outside of the United States and spoke only English. He visited eight countries and obtained a successful business, experiencing no handicap because of being limited to the English language, as English was spoken by some one in authority at the various business houses. A foreign representative should be a man of education and familiar with the forms of good society, as the social element is a strong factor in foreign business transactions.

**Visits from Foreign Buyers.**

Another method used successfully by the large manufacturers is to have their largest foreign buyers come to the United States. The visitor is carefully instructed concerning the methods of manufacturing, development of new lines and the effectiveness of sales and general merchandising systems. The writer entertained a large foreign merchant last year who shipped to his home almost a carload of American business appliances and office systems, with which he equipped his office, undoubtedly to the disgust and dismay of his native clerks. This merchant returned home with an enthusiasm for American methods and goods that will not quickly disappear. He had also learned many new uses for articles he had been purchasing from the United States, which enabled him to more rapidly extend his trade.

**In Regard to Catalogues.**

The character of descriptive catalogues sent abroad is of greatest importance. Many of them are of little value to the recipients, as they are unintelligible, especially in what pertains to technical lines. Many terms we use for tools and common parts are as Greek to even an Englishman. Special care should be taken to use the metric system for all sizes and weights. The important parts of catalogues should be printed in more than one language. The commercial world can be covered by English, French, German and Spanish.

**Quotation Wisdom.**

Letters of quotations are often ineffective. They should contain some description of the line to partially offset the result of catalogue possibly going astray, and they should avoid trade phrases, although universally used in this country. The foreign merchant is not accustomed to letters of short sentences and paragraphs; and clearness of description or expression should not be sacrificed for the purpose of curtailing the length of the letter. All quotations should be made c.i.f.—that is, include "Cost, insurance and freight," so that the buyer will know what the total cost will be at his home port. Orders are frequently lost by quoting f.o.b., New York, to dealers who receive c.i.f. quotations from some other factory. The c.i.f. quotation removes all doubt as to the exact cost delivered. Avoid quoting the numerous discounts that are used at home on Hardware and kindred lines. These are of the greatest annoyance to foreign buyers, and while understood in the United States are very confusing to foreigners. Adopt a single discount for each line, or, better still, quote net prices, if the line is not too varied.

**Packing Complaints.**

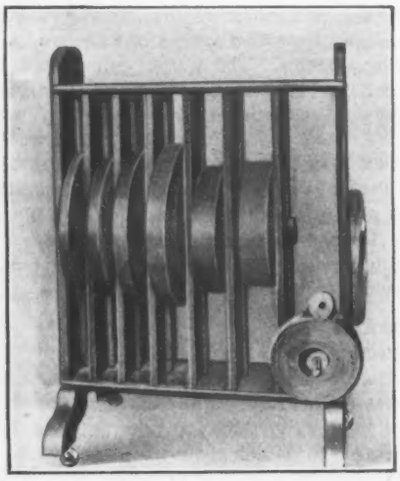
The most important part of foreign shipping is in relation to the packing, concerning which there is considerable complaint. Frequently proper protection is not given to the contents of cases, but as often the cases are not sufficiently strong. After 10 years' successful results with heavy shipments to almost all parts of the commercial

world the writer has found that cases should be made of 1 in. or 1¼ in. lumber, and be properly reinforced with box bands. In addition to protecting all parts to avoid breakage, a very careful study should be made to reduce each shipment to the least possible cubic feet to secure low ocean freights. Information should also be obtained as to the means of transporting from the various foreign ports, so that packages will not be too large to be carried by animals or received by narrow gauge railroads, as may be the custom.

*(To be continued.)*

## Movable Rack for Accommodating Belting.

THE accompanying illustration shows a convenient rack or stand for accommodating Leather Belting constructed by the supply firm of Kasper & Koetzle, 565 Bushwick avenue, Brooklyn, N. Y. It is a comparatively light affair, even when loaded, and is mounted on casters so that it may easily be moved about as desired. It holds seven sizes of Belt, covering the widths regularly called for by the customers of the firm, but could easily be made to include more sizes if required. The rack is about 4



*Movable Leather Belting Rack.*

ft. high and is made of boards about 1 in. thick, its appearance being improved by a coat of varnish. In the center of each upright partition is a shoulder with a slot opening upward, into which may be set the axles of the different coils. The method of contriving these axles may be understood by referring to the illustration, which shows one of the coils removed. In the center of the coil are put two of the tapering plugs, which come in rolls of wrapping paper, one on each side, with the smaller ends toward the center. Through the holes in these plugs is run a round piece of wood like a broom handle, which forms the axle of the coil, with the ends resting in the slots on either side. The illustration shows one of the plugs in place with the round axle sticking through; the other is removed and placed on top of the coil to indicate the construction.

## Requests for Catalogues, Etc.

*The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.*

**REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:**

FROM SLOVER HARDWARE COMPANY, Bridgeport, Texas, which has been incorporated with a capital stock of $14,000. The company handles a retail stock of Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils and Sporting Goods.

FROM A. HOOD & SONS IMPLEMENT COMPANY, successor to W. T. Forkner, Columbus, Kan., carrying Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints and Sporting Goods.

FROM GEORGE G. CLEMENS, Magnolia, Ill., whose store has been destroyed by fire. He carried Shelf Hardware, Stoves, Tinware, Agricultural Implements, Paints and Sporting Goods.

FROM STEINER & VOEGTLY HARDWARE COMPANY, 230-234 Diamond street, Pittsburgh, Pa., which has been incorporated with a capital stock of $125,000. The company handles Shelf and Builders' Hardware, Heavy Hardware, Cutlery, Tools and Agricultural Implements at wholesale and retail.

FROM DAY & RICHARDSON, who have purchased the business of F. K. Blake, Monmouth, Maine, including Hardware, Crockery, Tinware and Agricultural Implements.

## Price-Lists, Circulars, Etc.

*Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our Catalogue Department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.*

SIMONDS MFG. COMPANY, Fitchburg, Mass., New York branch house, 40 Murray street: Mailing folder relating to the extensive line of Saws manufactured by the company, including Rip, Hand, Panel, Jointer, Hand Hack, Compass and Keyhole Saws, &c., and containing a convenient order blank.

BERGER MFG. COMPANY, Canton, Ohio: Catalogue of Berger Steel Office Furniture, including Steel Filing Devices and Office Equipment.

SCHUCHARDT & SCHÜTTE, 136 Liberty street, New York: Illustrated pamphlets referring respectively to the Initiative Revolution Counter, which registers from 0 to 10,000 and to portable tachometers.

P. J. CONROY COMPANY, Philadelphia, Pa.: Price-list 1908, illustrating and describing different styles and sizes of the Conroy Refrigerator Door Fastener.

GEO. KRAUSE HARDWARE COMPANY, Lebanon, Pa.: Handy illustrated catalogue addressed to retail Hardware merchants, referring to spring and summer goods for the season of 1908.

HENRY ADOLPH KIRCHER, senior member of the Hardware firm of Kircher & Son and one of the most prominent citizens of Belleville, Ill., died on the 1st inst., after a brief illness from pneumonia. Mr. Kircher was born in Cass County, Ill., November 10, 1841, and removed to Belleville with his parents when a mere boy. He served with distinction throughout the Civil War, and, returning to Belleville, was elected Circuit Clerk and Recorder. In 1868 he became interested in the Hardware business established in 1848 by his father, Joseph Kircher, and Henry Goedeking, with which he continued until his death. Mr. Kircher had served as Mayor of Belleville, and for a number of years was a member of the Board of Education. For 25 years he was a director of the Belleville Savings Bank, and became president in 1904.

THE directors of the Hardware Dealers' Mutual Fire Insurance Company of Wisconsin met in Oshkosh, on the 5th inst., this being the regular quarterly meeting. The report of C. A. Peck, Berlin, secretary, was a gratifying one, showing that the business written since January 1 amounted to about $1,200,000, the total fire loss for four months being less than $800. The company's risks now extend over 24 States, and it is stated that the prospects for continuing a large dividend were never better. The merchants present at the meeting expressed themselves as well satisfied with the manner in which spring business had opened up and are looking forward to a good trade.

## Supplement to Russell & Erwin's Export Catalogue.

THE RUSSELL & ERWIN MFG. COMPANY, New Britain, Conn., and 94-98 Lafayette street, New York, has just issued a supplement to its export catalogue of 1904. The book contains upward of 100 pages, with alphabetical and numerical index, and treats not only of the Builders' Hardware, Padlocks, &c., manufactured by the company, but also covers many lines which the company handles as a jobber or agent, such as Stanley Works' Butts and Hinges, Bommer Spring Hinges, Swan's Chisels and Auger Bits, Yankee Tools, Nicholson Files, Stanley Rule & Level Company's goods, &c. These goods are listed in terms of English currency. The Russell & Erwin Mfg. Company has for many years maintained a London office and warehouse, with resident manager, where a stock is carried, and all its business with Great Britain is taken care of. The balance of its export business is handled from the main office in New York City.

## RETAIL DELIVERY RECORD.

IN the busy, modern Hardware store of A. Douglas Law, Springfield, Mass., may be observed a convenient arrangement for keeping track of local deliveries. The device is simple and economical, being entirely home made.

On the wall by the rear door of the store, which opens on a private driveway, is a hinged shelf (Fig. 1), which, when not in use, swings up against the wall, out of the way. When let down for use the shelf serves as a desk top, and assumes a similar angle, being held in the proper position by the short piece of chain fastened to the wall and to the edge of the shelf, as indicated. It has been found that there is no need of supporting the shelf on both sides, as there is no particular strain or weight on it. A narrow strip of board nailed to the wall forms the base on which the shelf is hinged. Fig 2 shows one of the delivery record sheets, which are fastened on the shelf by means of thumb tacks. A new sheet is put on each day, but the old sheets are retained underneath until all the items on them have been delivered. The blank, which is merely ruled off and headed by hand, affords space for entering all desired information regarding a delivery. It greatly facilitates the work of the wagon driver and also immediately affords any information wanted by clerks or inquiring customers.

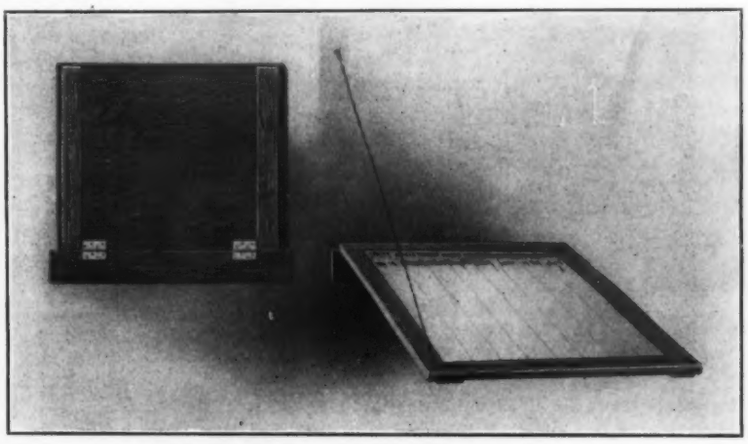


*Fig. 1.—Hinged Shelf Accommodating Delivery Sheets.*

| Date | Article | For Whom | Where | When Wanted | Filled by | When Del'd | Remarks |
|---|---|---|---|---|---|---|---|
| 14 | Waste Trash | C. P. Chase | Birney Av | Today | Dwan | 1 P.M. | Chgd |

*Fig. 2.—Delivery Record Sheet.*

ON MAY 1 the Messrs. McCleland retired from the T. McCleland Hardware Company, Jackson, Miss., and W. A. Scott, formerly president and manager of the Yazoo Hardware Company, Yazoo City, Miss., has taken entire charge of the business. The new officers of the company are: W. J. Davis, president; C. M. Huber, Crystal Springs, Miss., vice-president; A. C. Powell, secretary-treasurer, and W. A. Scott, manager. The directors are: W. J. Davis, C. M. Huber, W. A. Scott, A. C. Powell, W. Q. Cole, T. B. Gaddis and W. H. Watkins. The company will do a wholesale and retail business, and will employ three or four traveling men.

## LETTERS FROM THE TRADE.

*Our readers are invited to discuss in these columns questions of trade interests connected with the manufacture or sale of Hardware. We shall be pleased to have a free expression of opinion on subjects deserving the attention of Hardware merchants and manufacturers.*

### SYNDICATE BUYING FOR SMALLER JOBBERS.

*To the Editor:* In your issue, April 30, there was a very interesting article to every retail Hardware merchant in regard to the larger "jobbers" trying to prevent the smaller dealer, who does both a jobbing and retail business, from getting goods through syndicate buyers at prices, of course, lower than what the "big jobbers" will sell to the average retail trade.

What makes this article the more interesting is that the average retail Hardware merchant throughout the country is at a loss to understand what really is meant by the term "Hardware jobber." In our section of the country we find that the so-called "big jobbers" are the worst competitors we have, barring no one, not even the catalogue house. We find that the small jobber is not near as bad as the big fellow who has an immense line of goods. We know of several instances where we have lost sales on Steel Ranges, Base Burners, Rifles and Shotguns on account of our "big jobbers." Their salesmen call on the druggist, butcher, clothing and shoe man, fruit dealer, and even the saloon man in quest of business, and if any of the above, their clerks and salesmen, should need a Stove, Gun or Rifle he gets it from the "big jobber" at wholesale price.

Is this fair business on the part of the "big jobbers?" Is not this the reason, more than anything else, which has forced the larger retail Hardware merchants in self-protection to go into the jobbing business in order to increase the quantity of goods handled by them in various lines, and in order to be in a better position to buy in quantities so as to get jobbing prices?

The conditions to-day in our vicinity are such that unless a merchant is in position to buy the heavier goods in car lots he is between the devil and the deep sea as to how to meet the competition of his brother, the "big jobber," and if he is not in that position the sooner he closes up shop the better off he is.

We are sorry that conditions are in this shape, but it is entirely the fault of the big jobbers, and it is up to them to remedy the present prevailing evil. As soon as they decide to cut out the business of the butcher, druggist, &c., and stick strictly to their own line of trade, Hardware, they will find that the retail Hardwareman will stick to him, but as long as they persist in selling every Tom, Dick and Harry, they cannot expect much loyalty from the retail Hardware merchant.

MICHIGAN.

The W. L. Hubbard Company, Scottsburg, Ind., has been incorporated with $20,000 capital stock to do a Hardware and plumbing business. The directors are W. L. Hubbard, F. Hubbard and M. Hubbard.

## BRITISH COLUMBIA HARDWARE ASSOCIATION.

THE annual meeting of the British Columbia Hardware Dealers' Association was recently held in New Westminster, delegates from the coast cities of Vancouver and Victoria being present. President L. B. Lusby, New Westminster, presided and addressed the members on the work done during the past year. The report of Secretary-Treasurer Burns showed a credit balance after all expenses had been met. Vice-President Snell, Vancouver, discussed the question, "Has the Association Been a Success, and Should it be Continued?" in an interesting paper. His conclusions were optimistic and were heartily endorsed by the meeting. Mr. Ogilvie of the Ogilvie Hardware Company, Victoria, also made an interesting and practical address on "Hardware Window Dressing."

**Collection Department Established.**

William J. Butt, the newly elected secretary, Mr. Burns having resigned, outlined the association work he has undertaken. He is organizing the different branches

CHAS. SNELL,
President.

WM. J. BUTT,
Secretary-Treasurer.

of the retail trade in British Columbia, with a view to uniting them in one provincial association. The organization will take in country and city houses, and he has plans whereby it will be of great help in overcoming many difficulties with which the average retail merchant has to contend. In connection with this work Mr. Butt has started a credit reporting and collection department. Through this department association members will be advised as to the names and addresses of "slow pay" and "dead beat" customers in city and country. Reports will be issued monthly to members, and special information can be secured at any time by communicating with the secretary. Through this department members may also have bad accounts collected at a nominal figure.

Mr. Butt also explained to the meeting that while he planned to invite every branch of the retail trade in British Columbia to join the Provincial Association, each branch would have its own officers and manage its own special business. There would, however, be a great saving in office expenses, salaries, &c., by all uniting in one central body and better and fuller information as to slow pay customers could be furnished by the credit department. He also suggested that a strong provincial association might also undertake the organization of a mutual fire insurace company, and thereby effect a considerable saving in rates.

**Officers for 1908.**

The officers elected were as follows:

PRESIDENT, Chas. Snell, J. A. Flett, Ltd., Vancouver.
VICE-PRESIDENT, J. Stearman, Hodgson-Stearman Company, Victoria.
SECRETARY-TREASURER, Wm. J. Butt, Vancouver.
EXECUTIVE COMMITTEE: L. B. Lusby, Anderson & Lusby, New Westminster; George Blakely, T. J. Trapp Company, New Westminster, and Mr. Henderson, George Hunter Hardware Company, Vancouver.

A vote of thanks to the retiring officers was carried unanimously, and it was decided to hold the next meeting at Vancouver. Following the meeting a very enjoyable banquet was held at the Russell Hotel.

## AMONG THE HARDWARE TRADE.

The Creek Hardware Company, Muskogee, Okla., recently incorporated with a capital stock of $5000, will deal in Stoves, Ranges, Guns, Ammunition, Locks, Farm Supplies, Harness, Saddlery, and will also carry a small supply of Vehicles and Farm Implements. The company expects to erect a new store building in the fall. The incorporators are J. B. Wilson, W. H. Triplett and Wm. V. Hewett.

J. A. Hook has bought the business of Pierson Bros., Pierson, Ill.

The Hardware and Harness store of H. Tollefson, Bowdon, N. H., has been destroyed by fire, the loss being estimated at $21,000.

Rider & Cotton, Portsmouth, N. H., have disposed of their Hardware, Iron and Steel, Paint and Contractors' Supply business to Muchemore & Rider Company, which will continue in the same general line.

Lindahl & Swenson, Woodburn, Ore., have been succeeded in the Hardware, Stove, Tin and Paint business by M. J. Lindahl.

Thomas J. Tracy's Son has purchased the stock of William Clements & Son, 130 Milton avenue, Ballston Spa, N. Y., and will handle Shelf Hardware, Oils and Paints.

The Armstrong-Barrows Hardware Company, Inc., Norfolk, Va., succeeding J. B. Armstrong & Co., has lately been incorporated with a capital of $10,000. Mr. Armstrong is president, and R. N. Barrows, formerly of Newark, N. J., secretary and treasurer.

W. S. Coleman has succeeded to the Hardware business at Talmage, Neb., formerly owned by W. E. Carney.

Ricker & Landes have purchased the Hardware, Stove and Implement business of Hicks & Smith in Eureka, Kan.

J. H. Buker has entered the firm of W. F. Weigand & Co., Grass Valley, Ore., which handles general Hardware, Stoves, Agricultural Machinery, &c.

The Hunter-Stadleman Hardware Company, Blissfield, Mich., incorporated with a capital stock of $12,000, has succeeded the Phillips Company. The change involved is one of name only, the interests remaining the same.

The Charleston Hardware Company, Charleston, Ark., has been incorporated with a capital of $25,000 and will do a retail business in General Hardware, Stoves, Implements, Paints, Sporting Goods, &c.

D. R. Campbell has sold his interest in the Howard Hardware Company, Bellows Falls, Vt., to W. P. Abbott. The company deals in Shelf and Heavy Hardware, Agricultural Implements, Paints, Oils and Sporting Goods at wholesale and retail.

## Durand Steel Lockers.

AMONG the furnishings of modern industrial buildings provided for the convenience and security of employees individual Steel Lockers are fast becoming a recognized necessity. A well appointed line of such Lockers, examples of which are shown in the illustrations herewith, is made by the Durand Steel Locker Company, Chicago. The body of these Lockers is made of No. 20 United States gauge steel; to withstand the slamming and knocks to which they are subjected the doors are somewhat heavier, being made of No. 16 United States gauge steel. For the purpose of ventilation the doors,

and if desired the backs and bottoms, are perforated with holes, which, however, are not large enough to admit mice, and are without burrs and rough edges that might cut or damage clothing. These holes are too small to permit of articles being pulled through, or the insertion of wire cutters for making an opening. Each door is fitted with a multiple locking device by which it is secured at the top, middle and bottom, thereby leaving no opening for the entrance of a tool by which it might be pried open. The locking device is described as very simple in its construction and operation and not liable to get out of order. The Lockers are finished in furnace baked japan, hardened under a temperature of 400 degrees, which not only gives a durable gloss, but is attractive in appearance. Where solid sides and backs are used the clothes in one Locker are separated from those in the adjoining one, and in addition to being easily cleaned with a cloth they can be treated with disinfectants without damage to the fur-

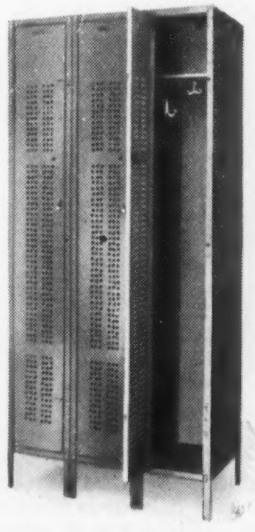


*Fig. 1.—Durand Steel Locker, Single Tier.*

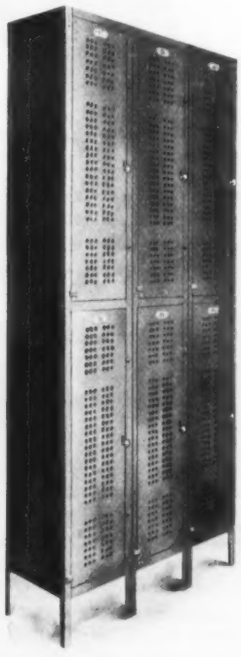


*Fig. 2.—Durand Steel Locker, Double Tier.*

nace baked japan finish. All similar parts being interchangeable, no mechanical alterations or cutting are required to rearrange them in different groupings. As skilled labor is not necessary for erection, the Lockers are shipped knocked down to save freight. As an additional measure of security, the doors are hung on hidden hinges and cannot be tampered with from the outside. The Lockers are supplied in either single or double tier. The standard sizes carried in stock are, double tier, 12 x 12 x 36 and 42 in. high, and 15 x 15 x 36 and 42 in. high; single tier, 12 x 12 x 60 and 72 in. high, and 15 x 15 x 60 and 72 in. high.

## Shelf or Assembling Trucks.

The George P. Clark Company, Windsor Locks, Conn., has added to its line the two styles of shelf or assembling trucks shown in the accompanying illustrations. No. 198, shown in Fig. 1, is intended for use in machine shops, bicycle, automobile, typewriter and clock factories, as well as for butcher shops, bakeries, hospitals, dining halls, &c. It is made of hardwood, nicely varnished, and has a large wheel mounted on a round axle in the rear, with swivel bracket casters in front. Its upright corner posts have holes bored in them 3 in. apart, making all shelves but the top one adjustable and removable by simply lifting up. The truck is regularly made with three shelves, but can be furnished with any number of shelves or in any style of mounting at additional charge. It will be shipped knocked down unless otherwise ordered. Truck No. 199 is intended for about the same purposes as No. 198, and is also made of hardwood, varnished, but has an iron handle. The top shelf is stationary and other shelves

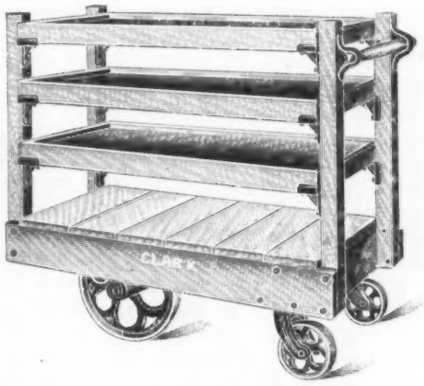


*Fig. 1.—Shelf or Assembling Truck, No. 198.*

are adjustable and removable. It is made regularly with two shelves and mounted on wheels with 1⅛-in. square axle, 8-in. cast iron fifth wheel plate in front. Any num-

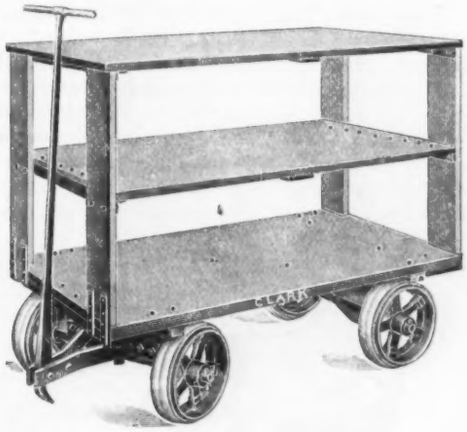


*Fig. 2.—Shelf or Assembling Truck, No. 199.*

ber of shelves and any style mountings are furnished at additional charge. Both styles of trucks are mounted on iron or Clark's noiseless rubber wheels.

## Sanitary Washboard.

The Cook Mfg. Company, St. Louis, Mo., is putting on the market the Sanitary washboard shown herewith. The entire board is constructed of No. 26 galvanized iron, especially made for this purpose, and comprises four separate pieces, which are put together with rivets, no solder being used in its construction. In connection with the board is a V-shaped galvanized iron bar for holding the soap, which is described as an economical device, so arranged that the drippings from the soap will run down over the rubbing surface. The legs of the board are 24 x 1½ x ⅝ in. in size; the soap board 6 x 11 in. and the rubbing surface 11 x 11½ in. The bottoms of the legs are lock seamed, and the upper parts are riveted to the rubbing surface. The soap board and rubbing surface are made in one piece. The back of the rubbing surface is braced with two galvanized rods, which are riveted to the legs. The company claims that the board is clean, because made entirely of metal; odorless, because metal will not absorb and hold odors and practically indestructible. It is stated that the boards weigh 40 lb. per dozen, and that they are sold at the same price as other washboards.

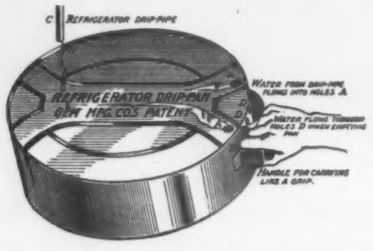
*Sanitary Washboard.*

## Testing Emery Wheels for Grade.

The American Emery Wheel Works, Providence, R. I., has designed and has in use mechanical grading machines for testing emery wheels for grade 1 which are designed to produce absolutely accurate results. This is referred to as an exclusive feature with these works. In the machines the pressure is always exactly the same, and the point coming in contact with the wheel is of a uniform thickness and width. A pointer indicates on a scale the exact resistance which the wheel offers to the tool, so that a variation of one-thirtieth of a grade may be read on the scale. It is remarked that not only are the manufacturers able to duplicate their wheels with exactness, but they can duplicate the grade of any sample sent them, or furnish wheels slightly harder or softer than the sample if so desired. It is pointed out that since wheels made on the same formula often vary in grade, owing to imperceptible chemical differences in the materials used or to the variation of a few degrees of heat in firing, it is obviously important to have an absolutely accurate method of grading.

## The Gem Refrigerator Drip Pan.

The Gem Mfg. Company, Chelsea Station, Boston, Mass., is placing on the market the refrigerator drip pan, shown herewith. It is of unique construction, being a galvanized drum with two heads, an inlet, an outlet, and one handle. The drippings from the refrigerator waste pipe falling anywhere upon the head flow to the side, near the handle, into the inlet holes, which are depressed

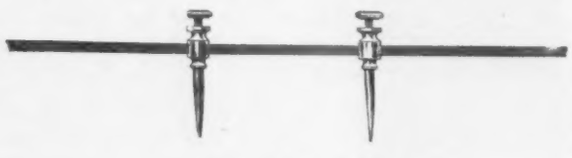



*The Gem Refrigerator Drip Pan.*

½ in. When it is desired to empty, the handle is grasped with one hand and carried without effort in a natural upright position to the sink or other place, where it is emptied without spilling a drop, avoiding liability of spilling the contents over the floor. The pan will hold 4 gal. of water.

## New Trammel Point.

We illustrate herewith a new trammel point, which is being placed on the market by the Economy Mfg. Company, 506 Commerce street, Philadelphia. The tool which



*New Trammel Point.*

is particularly adapted for pattern makers, sheet metal workers, cabinet makers and machinists, has a 3-16 in. square steel bar, 12 in. long, which is a unique feature and prevents the turning of the point, which is possible when a round bar is used. The bodies of the adjusting screws are of cast brass, nickel plated, and the points of tempered steel. The tool is well made and finished, and is being offered to the trade at a price to meet the demand for a high grade, moderate priced tool of this character.

In the illustrated description of the Wagner Hay Rack Fixtures, made by the Wagner Mfg. Company, Cedar Falls, Iowa, in our issue, 30th ult., the address of the company was erroneously given as Waterloo, Iowa. The trade will please note the correction. The manufacture of hay rack fixtures is a recent addition to the company's line of hardware specialties.

## The Perfection Lawn Sprinkler and Holder.

The Beaton & Bradley Company, New Britain, Conn., is offering the lawn sprinkler and holder shown herewith. The sprinkler is illustrated full size in Fig. 1, while a

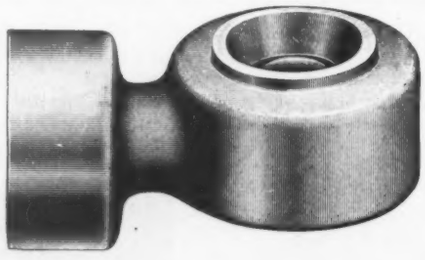


*Fig. 1.—Perfection Lawn Sprinkler.*

sectional view is given of it in Fig. 2. The brass knurled screw, shown directly under the opening in Fig. 2, is to regulate the fineness of the spray and the distance that

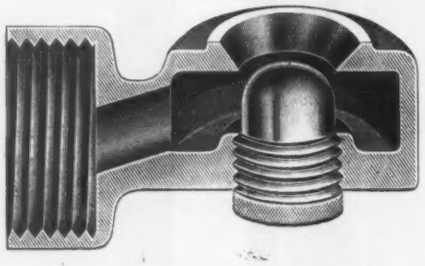


*Fig. 2.—Sectional View of Lawn Sprinkler.*

it may be thrown. The sprinkler is finished in black or green japan. The three-pronged standard, Fig. 3, insures a firm ground fastening for holding the sprinkler rigid. The swivel top permits the holder to be used as a hose

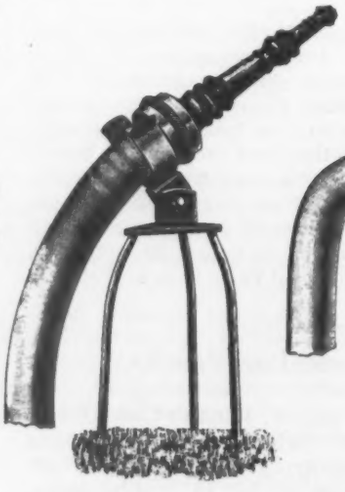


*Fig. 3.—Perfection Sprinkler Holder.*

*Fig. 4.—Holder Used as a Hose Supporter.*

support, as shown in Fig. 4, allowing the nozzle to be tilted at various angles and swung about to the right and left as desired.

E. A. Keithly Company, manufacturers' sales agent in plumbing and steam supplies, San Francisco, Cal., has removed its offices from 212 California street to the Metropolis Bank Building, corner of Market and New Montgomery streets.

## Ingersoll Watches.

Robert H. Ingersoll & Bro., 45-49 John street, New York, have just offered to the trade two new styles of watches, as here illustrated. Fig. 1 is the Yankee, made in brilliant gun metal finish, with engraved initial on the back. They can be supplied in assorted lots or with any initials asked for. For the convenience of the merchant additional backs (which are friction tight and snapped on) will be forwarded on memorandum, so that sales can be made from a moderate stock by merely changing the back from such assortment of letters in reserve. The watches are both stem wind and stem set, with black dials and second hands, and are to be retailed at the strictly maintained price of $1.25 each. Figs. 2 and 3 reproduce the Ingersoll, Jr., watch. The novelty in this

*Fig. 1.—Ingersoll Yankee, Initial Back Watch.*

*Fig. 2.—Ingersoll, Jr., Watch, Thin Model, Open Face.*

*Fig. 3.—Side View of Same Watch.*

style is the small size and thin model. It is made in what jewelers recognize as 12 size, the diameter of which is 1 13-16 in., the illustrations being about three-quarter size. This thin model is made in solid nickel case and also in gun metal finish and gold plate. It is stem wind and stem set. The movement plate is damaskeened; the white dials have either Roman or Arabic numerals.

## Pay Roll Check Writing Machine.

The Defiance Machine Company, Rochester, N. Y., manufacturer of check protectors and various other office appliances, is putting on the market the pay roll

*Pay Roll Check Writing Machine.*

check writing machine here illustrated. It is recommended as a time saver and as a protection against check raising, and is said to prevent checking or calling off wrong amounts. The machine embosses in the body of the check with indelible acid proof ink the exact amount of the check up to $100. A companion machine is furnished which writes from $101 up to $200, with even cents. There are two dials, the left hand representing dollars and the right hand cents. Side and back gauges admit of using any size check and printing on the amount line. For operating, the dials are set for the amount desired, the check is placed in the machine against the gauges and a quick blow with the lever completes the work.

## Sanitary Crystal Glass Ice Cream Freezer.

The Consolidated Mfg. Company, Connecticut Mutual Building, Hartford, Conn., is putting on the market the novel ice cream freezer shown herewith, which freezes without motion or labor. It consists of a glass jar with hole in the bottom and a glass cover held in place by a spring bail. There is also a push plate or false bottom

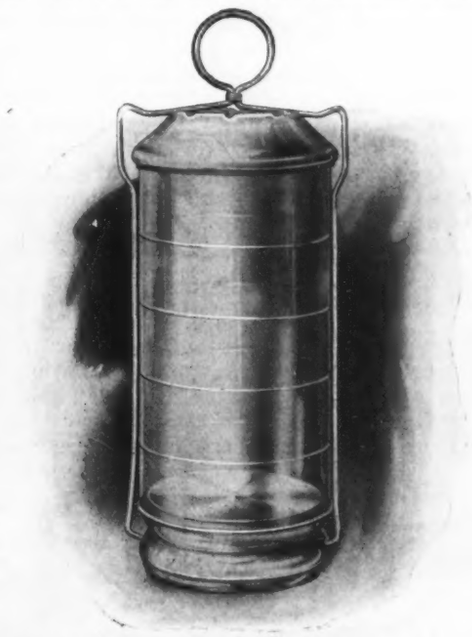


*Fig. 1.—Sanitary Crystal Glass Freezer.*

to fit in the jar when freezing cream. A push rod, bail and stopper, made of porcelain and rubber, with a rubber packing ring to go under the cover, complete the outfit. Following are the directions for use:

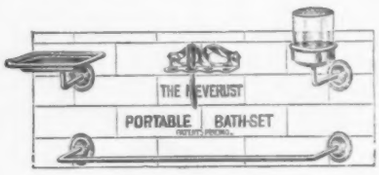
Having prepared the cream as per formulas, drop the plate or false bottom into the jar. Place the stopper in hole in bottom, allowing top of bail to incline to one side. Pour the mixture into the jar. See that the rubber packing ring is in position in groove in cover. Put on cover and spring bail up over it, being sure that it rests in opposite notches. This draws the bail tight and seals the jar at both top and bottom. Pack in a wooden pail or tub, using one part rock salt to three to five parts of finely pounded or chipped ice. When snow is available it can be used with equally good results. In either case use *plenty* around and on top of jar. Cover pail with blanket or rug, and set in a cool place. It will usually be ready to serve in 3 hr., but may be kept in pack as long as desired if ice and sale are renewed from time to time.

*Fig. 2.—Method of Removing Cream from Crystal Glass Freezer.*

In serving, the jar is removed from the ice pack and washed in cold water, and bail and cover are removed. Then the push rod is inserted in the hole in the bottom of the jar and pressed against the push plate as shown in Fig. 2, until the frozen cream protrudes at the top. The whole mass can be pushed out at once and sliced, or it can be cut off in desired portions and the balance covered up and repacked. It is claimed for the freezer that it is labor saving, simple and cleanly, with no parts difficult to keep clean or machinery to rust or wear out, and that it makes cream of a superlative quality, which can be served in an attractive form.

## The Neverust Portable Bath Set.

The H. & H. Mfg. Company, 554-562 West Twenty-fifth street, New York, is offering the portable bath set shown herewith. It provides a place for soap, towels, tooth brushes and tumbler. The back board is of enameled metal, in imitation of tile; it is 9 x 24 in. in size,

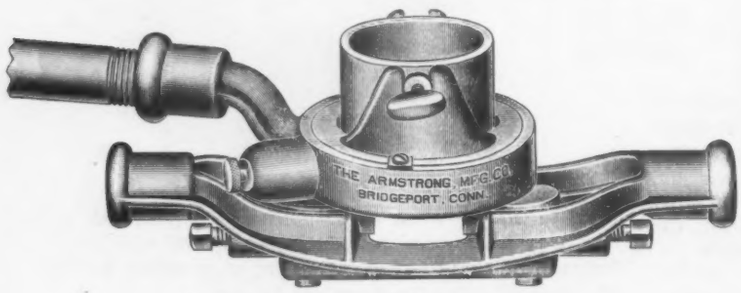



*The Neverust Portable Bath Set.*

and is held in place on the wall by two hooks which come with the set. The fixtures are fastened to the back securely by bolts. It is emphasized that the back board will not warp or break and is damp proof, and that as the fixtures are heavily nickel plated they will not rust.

## The Model B Armstrong Ratchet Attachment.

The model B ratchet attachment shown in the illustration is so constructed that it converts into a ratchet stock and die any stock of its maker, the Amrstrong Mfg. Company, Bridgeport, Conn. It can be used either right or left by reversing pawl without removal from

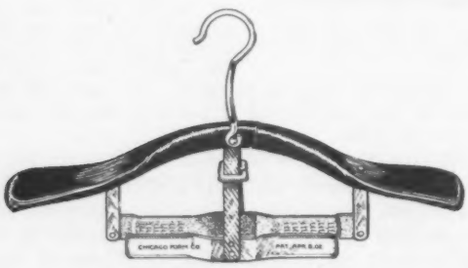



*Model B Armstrong Ratchet Attachment.*

the stock. It is not necessary to ratchet the die off the pipe. Instead one or two turns back permits the pawl to be disengaged by lifting and given a quarter turn; the stock is then turned and the ratchet remains idle. The attachment is so constructed that all the energy required to operate it is applied close to the center. The tool is made of malleable iron and is dust and chip proof.

## Goodform Coat, Trousers and Skirt Hanger.

The Chicago Form Company, 115 Franklin street, Chicago, has brought out the new combination hanger No. 9, here illustrated. It is designed to hold an entire



*Goodform Coat, Trousers and Skirt Hanger.*

suit of either ladies' or gentlemen's clothing and economizes wardrobe space by the compact disposition of garments. The hanger is made of pressed steel and is enameled and nicked plated. The trouser clamps have an offset at the center about an inch in width, which allows for the extra thickness formed by the side seams on the bottom hem and, being flexible, they adapt themselves perfectly to the fabric. Having a slight outward curve at the ends, the clamps do not crease the edges of the hems, which they are made to grip by a sliding link on the upright straps that draws them tightly together. When the pressure is thus applied the ends first engage the cloth and stretch it taut enough to avoid wrinkles and shrinking, and so bring an even pressure along the inner plane of the clamp. The coat hanger is designed to preserve the garment in its form-shape and effectually obviates the distortion produced by hanging from hooks and pegs. The combination set is described as being substantially made, neatly finished, and is packed one-half dozen sets in a box.

## Polar Star Freezer.

The Smith & Hemenway Company, 108-110 Duane street, New York, have put on the market the freezer here illustrated. It consists of a tin cylinder with beaded edge, with an inner can of the same metal. Inside of the can that contains the mixture there is a retinned dasher which does not revolve, but which in the process of freezing continually forces the material through the flanges and insures a smooth product. There are two steel con-

*Polar Star Ice Cream Freezer.*

tact points, retinned, fastened to the inside of large can and the bottom of receptacle for mixture to be frozen. After the inner can is filled the cover is put on, the can centered in the bearing, the hinged metal strap, 1¼ in. wide, snapped down and the handle, to which is affixed a 3-16-in. steel rod, slipped in and through the center of dasher into a groove at the bottom, so that the smaller can may be revolved. Two sizes are now ready for market, one to freeze two quarts and a smaller one for one quart, the latter really having an actual capacity of 1 1-5 quarts. The dimensions of the larger freezer are: Hight, 9½ in.; diameter, 7½ in., with an inner can 4⅜ x 8¼ in. The leverage of the handle to center of 1⅜-in. knob is 2¼ in., and but five minutes is required, it is said, to freeze cream. A list of recipes for various creams, sherbets, puddings, ices, frappés, &c., accompany each freezer. The can is packed with finely cracked ice and rock salt, covering sides and top in the customary way, there being a ⅜-in. hole in side of outer can to carry off any possible excess of brine due to carelessness, thus preventing any of it getting into the frozen mixture. After the cream is made the dasher can be removed and the can repacked in ice and salt, and if desired placed in a refrigerator for serving hours later if necessary. The same description applies to the one quart size, except that the inner can is 5¾ x 7½ in. and the outer one in proportion. A feature of this freezer is the moderate price at which it can be profitably retailed.

## Tap Wrench and Adjustable Parallels.

The L. S. Starrett Company, Athol, Mass., and 132 Liberty street, New York, has added tap wrench No. 91 and adjustable parallels, No. 154, to its lines of mechanical tools. The tap wrench is of new design and has other novel features. It is designed to hold securely square or round shank taps, and inside the knurled adjusting screw a spring, connected with the plunger, holds it back and causes instant movement with the screw. Fig. 2 illustrates a set of adjustable parallels to be used in connection with milling, planer and shaper vises, taking the place, it is said, of the large number usually required. They are also designed for leveling up work on planer, drill press, &c. Their capacity is from ⅜ in. to 2¼ in., and they are made in six sizes, the lengths of which run from 1¾ in. to 5 1-16 in., all 9-32 in. thick.

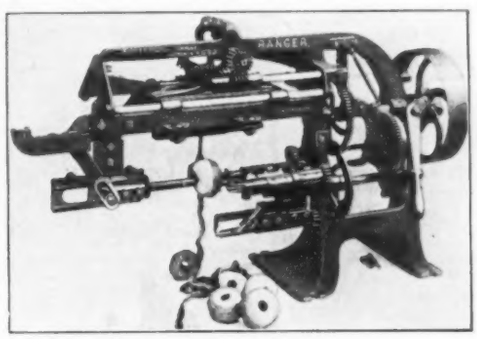
*Fig. 1.—Tap Wrench, No. 91.*

*Fig. 2.—Adjustable Parallels, No. 154.*

"The Creasey Ice Breaker and Ice Users' Handbook," published by Joseph S. Lovering Wharton, North Philadelphia Station, Philadelphia, Pa., while devoted primarily to the description of the Creasey ice breaker, contains, in addition, drawings showing arrangements for handling and breaking ice in refrigerator car icing stations, icecream manufacturing establishments, meat, fish and game shipping and packing houses, dairies, restaurants, hotels, hospitals, &c. It also contains short chapters on "Ice and Its Uses," "Cold Storage Temperatures," "Ice Cream Freezing" and "Refrigeration with Ice." It is shown that for refrigeration on a small scale it is often more economical and convenient to employ broken ice or broken ice and salt than to install refrigerating machinery, as uniform temperatures can be secured at a moderate cost with much less attention and with unskilled labor.

## Ranger Apple Parer.

The Ranger apple parer shown in the accompanying illustration, is made by the Goodell Company, Antrim, N. H. It is a power machine which the company states is demanded by large bakers, canners, evaporators, mince meat makers and others who use a large quantity of apples. The machine is declared to be very economical, as it takes a thin paring and also in that it completely pares the ordinary apple, leaving scarcely any trimming to be done. There is no knuckle joint, and the coring spoon can be readily adjusted. Every bearing has a brass bushing which can be easily removed and replaced in case of wear. The stopping and starting lever is placed so that the operator has constant control of the machine.




*Ranger Apple Parer.*

Paring, core and apple are each dropped in a separate position, and the claim is made that the machine represents a maximum of capacity and durability.

## The Brainerd Mfg. Company.

The Brainerd Mfg. Company, East Rochester, N. Y., has issued Supplement No. 1 to its 1907 catalogue showing only goods which it had formerly made in brass and is now making in steel. These include butts, hinges, support and side stop hinges, corners, mending straps, hasps, barrel bolts, chest handles, hook lifts, catches, corner ornaments and plates, key checks and hinge plates.

# PAINTS, OILS AND COLORS

### Animal, Fish and Vegetable Oils—

| | ℔ gal. |
|---|---|
| Linseed, State and Western, raw | 41 @42 |
| City, Boiled | 44 @45 |
| City, Raw | 42 @43 |
| Raw, Calcutta, in bbls | 70 @.. |
| Lard, Prime, Winter | 67 @70 |
| Extra No. 1 | 55 @57 |
| No. 1 | 47 @52 |
| Cotton-seed, Crude, f.o.b. mill | 35½@36½ |
| Summer Yellow, prime | 44 @44½ |
| Summer White | 46½@47 |
| Yellow Winter | 46½@47 |
| Tallow, Acidless | 52 @55 |
| Menhaden, Brown, Strained | 40 @.. |
| Light Strained | 40 @.. |
| Bleached Winter | 42 @.. |
| Ex. Bleached Winter | 44 @.. |
| Cocoanut, Ceylon | ℔ lb 6¼@ 6½ |
| Cochin | ℔ lb 7¼@ 7½ |
| Cod, Domestic, Prime | 42 @44 |
| Newfoundland | 44 @46 |
| Red, Elaine | 39 @40 |
| Saponified | ℔ lb 5¼@ 5½ |
| Olive, Yellow | 67 @69 |
| Neatsfoot, Prime | 55 @58 |
| Palm, Lagos | ℔ lb 5¾ 5¾ |

### Mineral Oils—

| | ℔ gal. |
|---|---|
| Black, 29 gravity, 25@30 cold test | 13 @13½ |
| 29 gravity, 15 cold test | 13½@14 |
| Summer | 12½@13 |
| Cylinder, light filtered | 20½@21 |
| Dark, filtered | 18 @19 |
| Paraffine, 903-907 sp. gravity | 14½@15 |
| 903 sp. gravity | 13½@14 |
| 883 sp. gravity | 11 @11½ |
| Red | 13½@14 |

### Miscellaneous—

| | |
|---|---|
| Barytes: | |
| White, Foreign | ℔ ton $18.50@20.50 |
| Amer. floated | ℔ ton 18.00@20.00 |
| Off color | ℔ ton 13.00@16.50 |
| Chalk, in bulk | ℔ ton 3.00@ 3.40 |
| China Clay, Imported | ℔ ton 11.50@18.00 |
| Cobalt, Oxide | ℔ 100 lb 1.45@ 2.60 |
| Whiting, Commercial | ℔ 100 lb .42@ .52 |
| Gilders | ℔ 100 lb .55@ .60 |
| Ex. Gilders | ℔ 100 lb .60@ .65 |

### Putty, Commercial—℔ 100 lb

| | |
|---|---|
| In bladders | $1.70 @1.85 |
| In bbls. or tubs | 1.20 @1.45 |
| In 1 lb to 5 lb cans | 2.65 @2.95 |
| In 12½ to 50 lb cans | 1.50 @1.90 |

### Spirits Turpentine—℔ gal.

| | |
|---|---|
| In Oil bbls | 45½@46 |
| In machine bbls | 46 @46½ |

### Glue—

| | ℔ lb |
|---|---|
| Cabinet | 12 @15 |
| Common Bone | 7½@ 9 |
| Extra White | 18 @24 |
| Fish, liquid, 50 gal, bbls., per gallon | 60 @1.20 |
| Foot Stock, White | 12 @14 |
| Foot Stock, Brown | 9 @11 |
| German Common Hide | 10 @12 |
| German Hide | 12 @18 |
| French | 10 @40 |
| Irish | 13 @16 |
| Low Grade | 10 @12 |
| Medium White | 14 @17 |

### Gum Shellac—

| | ℔ lb |
|---|---|
| Bleached, Commercial | @20 |
| Bone Dry | @25 |
| Button | @40 |
| Diamond I | @48 |
| Fine Orange | @32 |
| A. C. Garnet | @24 |
| G. A. L. | @19 |
| Kala Button | @18 |
| D. C. | @49 |
| Octagon B. | @40 |
| T. N. | @23 |
| V. S. O. | @48 |

### Colors in Oil—

| | ℔ lb |
|---|---|
| Black, Lampblack | 12 @14 |
| Blue, Chinese | 36 @46 |
| Blue, Prussian | 32 @36 |
| Blue, Ultramarine | 13 @16 |
| Brown, Vandyke | 11 @14 |
| Green, Chrome | 12 @16 |
| Green, Paris | @24 |
| Sienna, Raw | 12 @15 |
| Sienna, Burnt | 12 @15 |
| Umber, Raw | 11 @14 |
| Umber, Burnt | 11 @14 |

### White Lead, Zinc, &c.—

| | ℔ lb |
|---|---|
| Lead, English white, in Oil | 10½@10⅝ |
| Lead, American White: | |
| Lots of 500 lb or over, in Oil | @ 6¾ |
| Lots less than 500 lb, in Oil | @ 7¼ |
| Lead, White, in oil, 25 lb tin pails | @ 7¼ |
| Lead, White, in oil, 12½ lb tin pails | @ 7¾ |
| Lead, White, in oil, 1 to 5 lb assorted tins | @ 8¼ |

Lead, American. Terms: On lots of 500 lbs and over 2% for cash if paid in 15 days from date of invoice.

### Zinc, Dry—

| | ℔ lb |
|---|---|
| American, dry | 5½@ 5¾ |
| Red Seal (French process) | 6¾@ 7 |
| Green Seal (French process) | 7¼@ 7½ |
| German Red Seal (French process) | 6¾@ 7 |
| Green Seal | 7¼@ 7¾ |
| White Seal | 7¾@ 8¼ |
| French, Red Seal | 8¼@ 8¾ |
| Green Seal | 10½@10¾ |

### Dry Colors—

| | ℔ lb |
|---|---|
| Black, Carbon | 6¼@10 |
| Black Drop, American | 3½@ 8 |
| Black Drop, English | 5 @15 |
| Black, Ivory | 16 @20 |
| Lamp, commercial | 4 @ 6 |
| Blue, Celestial | 4 @ 6 |
| Blue, Chinese | 31 @33 |
| Blue, Prussian | 29 @31 |
| Blue, Ultramarine | 3½@15 |
| Brown, Spanish | ½@ 1 |
| Carmine, No. 40 | $3.10@3.25 |
| Green, Chrome, ordinary | 3½@ 5 |
| Green, Chrome, pure | 17 @25 |
| Lead, Red, bbls., ½ bbls., kegs. | @ 6¾ |
| Litharge, bbls., ½ bbls., kegs. | @ 6¾ |
| Ocher, American | ℔ ton $8.50@16.00 |
| American Golden | 2½@ 3¼ |
| French | 1¼@ 2 |
| Foreign Golden | 3 @ 4 |
| Orange Mineral, English | 10 @12 |
| French | 12¾@13 |
| German | 12 @13 |
| American | 8½@ 8¾ |
| Red, Indian, English | 4½@ 6 |
| American | 3 @ 3¼ |
| Red, Turkey, English | 4 @10 |
| Red, Tuscan, English | 7 @10 |
| Red, Venetian, Amer. | ℔ 100 lb $0.50@1.25 |
| English | ℔ 100 lb $1.15@1.60 |
| Sienna, Italian, Burnt and Powdered | 3 @ 9 |
| Italian, Raw, Powdered | 3 @ 7 |
| American, Raw | 1½@ 2 |
| American Burnt and Pow'd. | 1½@ 2 |
| Talc, French | ℔ ton $18.00@25.00 |
| American | ℔ ton 15.00@25.00 |
| Terra Alba, French | ℔ 100 lb .90@ 1.00 |
| English | ℔ 100 lb .80@ 1.00 |
| American | ℔ 100 lb, No. 1. .75@ .80 |
| American | ℔ 100 lb, No. 2. .60@ .85 |
| Umber, T'key, Bnt. & Pow. | 2¾@ 3 |
| Turkey, Raw and Powdered | 2¾@ 3 |
| Burnt, American | 1½@ 2 |
| Raw, American | 1½@ 2 |
| Yellow, Chrome, Pure | 13¾@15 |
| Vermilion, American Lead | 7 @25 |
| Quicksilver, bulk | 65 @.. |
| Quicksilver, bags | @66 |
| English, Imported | 65 @70 |
| Chinese | $0.90@1.00 |

# Current Hardware Prices.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Range of Prices.**—A range of prices is indicated by means of the symbol *@*. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1907, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—"The Iron Age Standard Hardware Lists" contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

### Adjusters, Blind—

Columbian and Domestic....33⅓%
North's....10%
Zimmerman's—See Fasteners, Blind.

### Window Stop—

Ives' Patent....35%
Taplin's Perfection....35%

### Ammunition—See *Caps, Cartridges, Shells, &c.*

### Anti-Rattlers—

Fernald Mfg. Co. Burton Anti-Rattlers, ℔ doz. pairs, Nos. 1, $0.75; 2, $0.60; 4, $1.00; 5, $0.50.
Fernald Quick Shifter, ℔ doz. pairs....$2.00@$3.00

### Anvils—American—

Eagle Anvils....℔ lb @8½¢
Hay-Budden, Wrought....9½@9¾¢
Trenton....℔ lb 9½@9¾¢

### Imported—

Swedish Solid Steel Sisco, Superior, ℔ lb....10@10½¢
Peter Wright & Sons, ℔ lb, 84 to 349 lb, 11¢; 350 to 600 lb, 11½¢.

### Anvil, Vice and Drill—

Millers Falls Co., $18.00....15&10%

### Apple Parers—See *Parers, Apple, &c.*

### Aprons, Blacksmiths'—

Livingston Nail Co....10%

### Augers and Bits—

*Com. Double Spur....75&10@80%*
*Jennings' Patn., Bright.65&10@70%*
*Black Lip or Blued...65@65&5%*
*Boring Mach. Augers....70%*
*Car Bits, 12-in. twist....40&10%*
Ford's Auger and Car Bits....40&5%
Ft. Washington Auger Co., Conard's....35%
Forstner Pat. Auger Bits....25%
C. E. Jennings & Co.:
No. 10 ext. lip. R. Jennings' list, 25&7½%
No. 30, R. Jennings' list....50%
Russell Jennings'....25&10&2½%
L'Hommedieu Car Bits....15%
Mayhew's Countersink Bits....45%
Pugh's Black....20%
Pugh's Jennings' Pattern....35%
Snell's Auger Bits....60%
Snell's Bell Hangers' Bits....60%
Snell's Car Bits, 12-in. twist....60%
Snell's King Auger Bits....50%
Wright's Jennings' Bits....50%

### Bit Stock Drills—

See *Drills, Twist.*

### Expansive Bits—

Clark's Pattern, No. 1, ℔ doz., $26; No. 2, $18....60&10%
Ford's, Clark's Pattern....66⅔&5%
C. E. Jennings & Co., Steer's Pat..25%
Lavigne Pat., small size, $18.00; large size, $26.00....60&10%
Swan's....60%

### Gimlet Bits—

*Per gro.*
*Common Dbl. Cut....$3.00@3.25*
*German Pattern, Nos. 1 to 10, $4.75; 11 to 13, 55.75*

### Hollow Augers—

*Bonney Pat., per doz..$5.50@6.00*
Ames....20&10%
Universal....20%

### Ship Augers and Bits—

*Ship Augers....40&10@—%*
Ford's....33⅓&5%
C. E. Jennings & Co.:
L'Hommedieu's....6%
Watrous'....33⅓&7½%
Snell's....48%

### Awl Hafts—See *Handles, Mechanics' Tool.*

### Awls—

*Brad Awls:*
*Handled....gro, $2.75@3.00*
*Unhdled, Shldered..gro.63@66¢*
*Unhandled, Patent..gro.66@70¢*
*Peg Awls:*
*Unhandled, Patent..gro. 31@3¼¢*
*Unhdled, Shldered..gro. 65@70¢*
*Scratch Awls:*
*Handled, Com...gro. $3.50@4.00*
*Handled, Socket.gro.$11.50@12.00*

### Awl and Tool Sets—See *Sets, Awl and Tool.*

### Axes—

*Single Bit, base weights: Per doz.*
*First Quality....$4.75@5.00*
*Second Quality....$4.25@4.50*
*Double Bit, base weights:*
*First Quality....$7.00@7.50*
*Second Quality....$6.50@6.75*

### Axle Grease—

See *Grease, Axle.*

### Axles—Iron or Steel.

*Concord, Loose Collar..4½@5 ¢*
*Concord, Solid Collar...4¾@5¼¢*
*No. 1 Common, Loose...3¾@4¼¢*
*No. 1½ Com., New Style..4½@5 ¢*
*No. 2 Solid Collar....4½@5 ¢*
*Half Patent:*
*Nos. 7, 8, 11 and 12..65@65&10%*
*Nos. 13 to 14....65@65&10%*
*Nos. 15 to 18....70@70&10%*
*Nos. 19 to 22....70@70&10%*

### Boxes, Axles—

*Common and Concord, not turned....lb., 5@6¢*
*Common and Concord, turned, lb., 6@7¢*
*Half Patent....lb., 9½@10¢*

### Bait—Fishing—

Hendryx:
A Bait....20%
B Bait....25%
Competitor Bait....20&5%

### Balances—Sash—

Caldwell new list....50&10%
Pullman....50&10%

### Spring—

*Spring Balances....50&10@60%*
Chatilion's:
Light Spg. Balances....50@50&10%
Straight Balances....40@40&10%
Circular Balances....50&10%
Large Dial....30%

### Barb Wire—See *Wire, Barb.*

### Bars—Crow—

*Steel Crowbars, 10 to 40 lb.... per lb., 2¼@2½¢*

### Towel—

No. 10 Ideal, Nickel Plate..℔ gro. $8.50

### Beam, Scale—

*Scale Beams....40%*
Chattillon's No. 1....30%
Chatillon's No. 2....40%

### Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.80; Tinned....$0.85
No. 11 Wire Coppered ℔ doz. $1.15; Tinned....$1.20
No. 10 Wire Tinned....℔ doz. $1.50

### Beaters Egg—

Holt-Lyon Co.:
Holt, per doz., No. 5, Jap'd, $0.80; No. A, Jap'd, $1.15; No. B, Jap'd, $1.85; No. 6, Jap'd, $1.65.
Lyon, Jap'd, per doz., No. 2, $1.35.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60, $6.00; No. 75, $6.50; No. 100, $7.00; No. 102, Tin'd, $8.50; No. 150, Hotel, $15.00; No. 152, Hotel Tin'd, $17.00; No. 200, Tumbler, $8.50; No. 202, Tumbler Tin'd, $9.50; No. 300, Mammoth, per doz., $25.00.
Turner & Seymour Mfg. Co.:
T. & S. Dover....$6.50

### Bellows—

*Blacksmith, Standard List:*
*Split Leather....60&10@65%*
*Grain Leather....50&10&10%*

### Hand—

| | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|
| *Inch..* | | | | | |
| *Doz..* | $5.00 | 5.50 | 6.00 | 6.50 | 7.50 |

### Molders—

| | 10 | 12 | 14 | 16 |
|---|---|---|---|---|
| *Inch..* | | | | |
| *Doz..* | $7.50 | 9.00 | 12.00 | 15.00 |

*Net Prices.*

### Bells—Cow—

*Ordinary Goods..75&5@75&10&5%*
*High grade....70&10@75%*
Jersey....75&10%
Texas Star....50%

### Door—

Home, R. & E. Mfg. Co.'s....55&10%

### Hand—

*Polished, Brass....50&10@60%*
*White Metal....50&10@50&10&5%*
*Nickel Plated....50&5%*
*Swiss....50&5%*
Cone's Globe Hand Bells....33⅓@35%

### Miscellaneous—

*Farm Bells....lb., 2¼@2½¢*
*Church and School....60@60&5%*

### Belting—Leather—

*Standard....70&10@70&10&5%*
*Light....75&10%*
*Cut Leather Lacing...50&10@60%*
*Leather Lacing Sides, per sq. ft. 21@22¢*

### Rubber—

*Competition (Low Grade), 70&10@75&5%*
*Standard....60@60&10%*
*Best Grades....33⅓ @ 40&10%*

### Bench Stops—

See *Stops, Bench*

### Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters....20%

### Bicycle Goods—

John S. Leng's Son & Co.'s 1907 list: Chain, Parts, Spokes....50%
Tubes....60%

### Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

### Blocks Tackle—

*Common Wooden....75@75&5%*
B. & L. B, Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%.
Lane's Patent Automatic Lock and Junior....30%
See also Machines, Hoisting.

### Boards, Stove—

*Paper and Wood Lined....55%*
*Embossed....55%*

### Boards, Wash—

See *Washboards.*

### Bobs, Plumb—

Keuffel & Esser Co....33⅓%

### Bolts Carriage, Machine, &c.—

*Common Carriage (cut thread):*
*⅜ x 6 and smaller..75&5@—%*
*Larger and longer....70@—%*
*Phila. Eagle, $3.00 list...80@—%*
*Bolt Ends....70@—%*
*Machine (Cut Thread)*
*⅜ x 4 and smaller..75&10@—%*
*Larger and longer....70@—%*

### Door and Shutter—

*Cast Iron Barrel, Japanned, Round Brass Knobs:*

| *Inch* | 3 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|
| *Per doz..* | $0.30 | .35 | .45 | .60 | .80 |

*Cast Iron Spring Foot, Jap'd:*

| *Inch* | 6 | 8 | 10 |
|---|---|---|---|
| *Per doz..* | $1.20 | 1.50 | 2.25 |

*Cast Iron Chain, Flat, Japanned:*

| *Inch* | 6 | 8 | 10 |
|---|---|---|---|
| *Per doz..* | $1.00 | 1.40 | 1.65 |

*Cast Iron Flat Shutter, Jap'd, Brass Knobs:*

| *Inch* | 6 | 8 | 10 |
|---|---|---|---|
| *Per doz..* | $0.75 | .95 | 1.25 |

*Wrought Barrel Jap'd..80@80&10%*
*Barrel Bronzed....60&10%*
*Spring....70&10@70&10&10%*
*Shutter....50&5@50&10&5%*
*Square Neck....75@75&10%*
*Square....70&10&10%*
Ives' Patent Door....55%
Ives' Wrought Metal....45%

### Expansion—

Richards Mfg. Co....55&10%
Steward & Romain Mfg. Co.:
Style No. 13, Double....60%
Style No. 1, Single....60%
Style No. 100, Dbl. Jaw, Single..55%
Lag Screw....66⅔%

### Plow and Stove—

*Plow....65&5@70%*
*Stove....85@85&5%*

### Tire—

*Common Iron....80%*
*Norway Iron....80%*
American Screw Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Bay State, list Dec. 28, '99....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...82½%
Eclipse, list Dec. 28, '99....80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99....80%
Norway Phila., list Oct. '84...80%
Eagle....82½%
Shelton Co.:
Tiger Brand, list Dec. 28, '99....80%
Phila., Eagle, list Oct. 16, 1884..82½%
Upson Nut Co.:
Tire Bolts....72½%

### Borers, Bung—

*Borers Bung, Ring, with Handle:*

| *Inch* | 1¼ | 1½ | 1¾ | 2 |
|---|---|---|---|---|
| *Per doz..* | $4.80 | 5.60 | 6.40 | 8.00 |
| *Inch* | 2¼ | 2½ | | |
| *Per doz* | $8.65 | 11.50 | | |

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.75; No. 3, $2.50 each....25%

### Boxes, Mitre—

C. E. Jennings & Co....25%
Langdon, New Langdon and Langdon Improved, 20&10%; Langdon Acme....15&10%
Perfection....40%
Seavey....45%

### Braces—

*Comman Ball, American....$1.50*
Barber's....50&10&10@60&10%
Fray's Genuine Spofford's....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414....60%
C. E. Jennings & Co....50&5%
Mayhew's Ratchet....60%
Mayhew's Quick Action Hay Pat...50%
Millers Falls Drill Braces....25&10%
P., S. & W. Co., Peck's Pat....60&10%

### Brackets—

*Wrought Steel....70&10@75&10%*
Bradley Metal Clasp...80&10@80&10&5%
Griffin's Pressed Steel....75@75&10%
Griffin's Folding Brackets....70&10%
Taplin Victor Handy Egg Beater Bracket....℔ doz. $1.50

### Bright Wire Goods—

See *Wire and Wire Goods.*

### Broilers—

Kilbourne Mfg. Co....75&20%
Wire Goods Co....75%

### Buckets, Galvanized—

*M'fr's list, price per gross.*

| *Quart..* | 10 | 12 | 14 | |
|---|---|---|---|---|
| *Water, Reg...* | 25.35 | 28.00 | 32.00 | 10&5&5% |
| *Water, Hvy...* | 45.35 | 48.00 | 52.00 | |
| *Fire, Rd. Btm..* | 32.00 | 34.65 | 38.65 | |
| *Well....* | 37.35 | 41.35 | 45.35 | |

### Bull Rings—See *Rings, Bull.*

### Butts—Brass—

*Wrought, High List, Oct. 26,'06.55%*
Cast Brass, Tiebout's....40%

### Cast Iron—

*Fast Joint, Broad....40&10@50%*
*Fast Joint, Narrow...40&10@50%*
*Loose Joint....70&10@75%*
*Loose Pin....70&10@75%*
*Mayer's Hinges....70@70&5*
*Parliament Butts....70@70&5*

### Wrought Steel—

*Bright*

*Light Narrow, Light Reversible....70&5%*
*Reversible and Broad..70&5%*
*Loose Joint, Narrow, Light Inside Blind, &c....70%*
*Back Flaps, Table Chest..65%*

*Japanned.*

*Light Narrow, Loose Pin, 40&5%*
*Light Narrow, Ball Tip..60%*
*Broad....40&5%*
*Steeple Tipped....70%*
*Ball Tipped....70%*

*Extra, 10@—*

## Cages, Bird—

Hendryx Brass: Scries 3000, 5000, 1100, net list; 1200, 15%; 200, 300, 900 ..... 30%
Hendryx Bronze: Series 700, 800.... 30%
Hendryx Enameled..... 35%

## Calipers—See *Compasses.*

## Calks, Toe and Heel—

*Blunt, 1 prong, per lb., 4¼@4¾¢*
*Sharp, 1 prong, per lb., 4¾@5¼¢*
Burke's, Blunt, 4@4¾¢; Sharp, 4½@5¼¢
Lautier, Blunt, 4@4¼¢; Sharp, 4½@4¾¢
Perkins', Blunt, ℔ lb, 3.65¢; Sharp, 4.15¢

## Can Openers—

See *Openers, Can.*

## Caps, Percussion—

*Eley's E. B..... 52@55¢*
*G. D..... per M 34@35¢*
*F. L..... per M 40@42¢*
*G. E..... per M 48@50¢*
*Musket ..... per M 62@63¢*

## Primers—

*Berdan Primers, $2 per M.. 20&5%*
*Primer Shells and Bullets.. 15&10%*
*All other primers per M. $1.52@1.60*

## Carpet Stretchers—

See *Stretchers, Carpet.*

## Cartridges—

*Blank Cartridges:*
*32 C. F., $5.50..... 10&5%*
*38 C. F., $7.00..... 10&5%*
*22 cal. Rim, $1.50..... 10&5%*
*32 cal. Rim, $2.75..... 10&5%*
*B. B. Caps, Con. Ball, Swgd. $1.90*
*B. B. Caps, Round Ball.... $1.40*
*Central Fire..... 25%*
*Target and Sporting Rifle. 15&5%*
*Primed Shells and Bullets. 15&10%*
*Rim Fire, Sporting..... 50%*
*Rim Fire, Military..... 15&5%*

## Casters—

*Bed ..... 65&10%*
*Plate ..... 60&5%*
*Philadelphia ..... 70&10%*
Acme, Ball Bearing..... 35%
Gem (Roller Bearing).....70&10&10&5%
Steel Gem..... 20%
Standard Ball Bearing..... 45%
Yale (Double Wheel) low list...40&10%

## Cattle Leaders—

See *Leaders, Cattle.*

## Chain, Proof Coil—

*American Coil, Straight Link:*

| 3-16 | ¼ | 5-16 | ⅜ | 7-16 | ½ | ⅝ |
|---|---|---|---|---|---|---|
| $8.15 | 5.55 | 4.60 | 3.95 | 3.75 | 3.65 | 3.55 |

¾-⅞-1 1⅛ to 1¼ inch.
$3.45 3.55
*In cask lots, deduct 25¢.*
*German Coil..... 60@60&5%*
*German Pattern Coil:*
*6-0 to 1..... 70&5@70&10%*
*2 and 3.. 60&10&10@60&10&10&5%*
*4, 5 and 6..... 50&10@50&10&5%*

## Halter—

*Halter Chains..... 60@60&5%*
*German Pattern Halter Chains, list July 24, '97..... 60&10&5%*
Covert Mfg. Co.:
Halter ..... 35&5%

## Cow Ties—

See *Halters and Ties.*

## Trace, Wagon, &c.

*Traces, Western Standard: 100 pr.*
*6½—6-3, Straight, with ring. $28.00*
*6½—6-2, Straight, with ring. $29.00*
*6½—8-2, Straight, with ring. $32.00*
*6½—10-2, Str'ght, with ring. $37.00*
*NOTE.—Add 2c per pair for Hooks Twist Traces: add per pair for Nos. 2 and 3, 2c: No. 1, 3c; No. 0, 4c to price of Straight Link.*
*Eastern Standard Traces, Wagon Chain, &c... 60&10@60&10&5%*

## Miscellaneous—

*Jack Chain, list July 10, '93:*
*Iron ..... 60&10&7½%*
*Brass ..... 65%*
*Safety and Plumbers' Chain. 75%*
*Gal. Pump Chain.... lb., 4½@5%*
Bridgeport Chain Co.:
Triumph Halter and Coil. 35&2½@40%
Triumph Dog..... 50&10@60%
Brown Halter and Coil.... 45@50&5%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion ..... 40%
Oneida Community:
American Halter, Dog and Kennel Chains ..... 35&2½@40%
Niagara Dog Leads and Kennel Chains ..... 45@50&5%
Wire Goods Co.:
Dog Chain..... 70%
Universal Dbl.-Jointed Chain..... 50%

## Chain and Ribbon, Sash—

Oneida Community:
Steel Chain..... 60%
Pullman:
Bronze Chain, 60%; Steel Chain, Coppered ..... 60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft. ..... $2.00@$5.00
Sash Ribbon Attachments, per set..8¢

## Chalk— (From Jobbers.)

*Carpenters' Blue.... gro., 50@55¢*
*Carpenters' Red.... gro., 45@50¢*
*Carpenters' White... gro., 40@45¢*

## Checks, Door—

Bardsley's ..... 45%
Pullman, per gro..... $54 00
Russwin ..... 33⅓%

## Chests, Tool—

American Tool Chest Co.:
Boys' Chests, with Tools..... 50%
Youths' Chests, with Tools..... 35%
Gentlemen's Chests, with Tools..25%
Farmers', Carpenters, etc., Chests, with Tools ..... 20%
Machinists' and Pipe Fitters' Chests, Empty..... 45%
Tool Cabinets..... 45%
C. E. Jennings & Co.'s Machinists' Tool Chests..... 7½%

## Chisels—Socket Framing and Firmer

*Standard List..... 80&10@—%*
Buck Bros..... 30%
C. E. Jennings & Co.:
Socket Firmer No. 10..... 25&7½%
Socket Framing No, 15..... 25&7½%
Swan's ..... 66⅔@70%
L. & I. J. White & Co..... 30@30&5%

## Tanged—

*Tanged Firmers..... 30&5@35%*
Buck Bros..... 30%
C. E. Jennings & Co. Nos. 191, 181..25%
L. & I. J. White Co..... 25&5%

## Cold—

*lb.*
*Cold Chisels, good quality. 13@15¢*
*Cold Chisels, fair quality. 11@12¢*
*Cold Chisels, ordinary.... 9@10¢*

## Chucks—

Almond Drill Chucks..... 35%
Almond Turret Six-Tool Chuck.... 40%
Beach Pat, each $8.00..... 35&5%
Empire ..... 25%
Blacksmiths' ..... 25%
Jacobs' Drill Chucks..... 35%
Pratt's Positive Drive..... 25%
Skinner Patent Chucks:
Independent Lathe Chucks..... 35%
Universal, Reversible Jaws..... 35%
Combination, Reversible Jaws.... 35%
Drill Chucks, New Model, 25%; Standard, 45%; Skinner Pat. 25%; Positive Drive..... 40%
Planer Chucks..... 20%
Face Plate Jaws..... 35%
Standard Tool Co.:
Improved Drill Chuck..... 45%
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6, 7, 8 and 17, 40%; No. 21..... 35%
Scroll Combinations, Nos. 83 and 84 ..... 30%
Geared Scroll, Nos. 33, 34 and 35..25%
Independent Iron, Nos. 18 and 318.35%
Independent Steel, No. 64..... 25%
Union Drill, Nos. 000, 00, 100, 101, 102, 103, 104..... 35%
Union Czar Drill..... 25%
Universal, 11, 12, 16, 17, 13, 14, 15..40%
Universal No. 42..... 35%
Iron Face Plate Jaws, Nos. 28, 30, 48 and 50..... 35%
Steel Face Plate Jaws, Nos, 70 and 72 ..... 30%
Westcott Patent Chucks:
Lathe Chucks..... 50%
Little Giant Auxiliary Drill..... 50%
Little Giant Double Grip Drill..50%
Little Giant Drill, Improved..... 50%
Oneida Drill..... 50%
Scroll Combination Lathe..... 50%
Whitaker Mfg. Co.:
National Drill..... 25%

## Clamps—

Adjustable Hammers..... 20@20&5%
Carriage Makers', P., S. & W. Co. ..... 50&10%
Besly, Parallel..... 33⅓&10%
Myers' Hay Rack..... 45%
Lineman's Swedish Neverturn..... 65%
Wood Workers' Hammers..... 40&10%
Saw Clamps, see Vises, Saw Filers'.

## Cleaners, Drain,

Iwan's Champion, Adjustable..... 50%
Iwan's Champion, Stationary..... 40%

## Sidewalk—

Star Socket, All Steel..℔ doz. $4.05 net
Star Shank, All Steel..℔ doz. $3.24 net
W. & C. Shank, All Steel, ℔ doz., 7½ in., $3.00; 8 in., $3.25.

## Cleavers, Butchers'—

Foster Bros..... 30%
Fayette R. Plumb..... 30%
L. & I. J. White Co..... 30%

## Clippers, Horse and Sheep—

Chicago Flexible Shaft Co.:
1902 Chicago Horse, each..$10.75
20th Century Horse, each...$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each..$20.00
Stewart's Enclosed Gear Horse, each..... $6.75
Stewart's Patent Sheep Shearing Machine, each..... $12.75
Stewart Enclosed Gear Shearing Machine, No. 8, each..$9.75
} 20%

## Clips, Axle—

*Regular Styles, list July 1, '05. 80&80&10%*

## Cloth and Netting, wire

—See *Wire, &c.*

## Cocks, Brass—

*Hardware list:*
*Plain Bibbs, Globe, Kerosene, Racking, Liquor, Bottling, &c ..... 75%*
*Compression Bibbs..... 70%*

## Coffee Mills—

See *Mills, Coffee.*

## Collars, Dog—

Nickel Chain, Walter B. Stevens & Son's list..... 40%
Leather, Walter B. Stevens & Son's list ..... 40%

## Compasses, Dividers, &c.

*Ordinary Goods..... 70&10@75%*
Wm. Schollhorn Co.:
Excelsior Dividers..... 60%
Lodi Dividers..... 70&10%

## Conductor Pipe,—

*L. C. L. to Dealers:*

| | Gal. Steel. | Charcoal. |
|---|---|---|
| *Northeastern* | 70&10% | 50&10&7½% |
| *Eastern* | 75% | 50&10&7½% |
| *Pittsburgh* | 75&10&5% | 60% |
| *Central* | 75&10% | 60% |
| *Northwestern* | 75&7½% | 60% |
| *Western* | 70&12½% | 50&12½% |
| *Tennessee* | 70&10% | 50&12½% |
| *Southern* | 70% | 50&12½% |
| *Southwestern* | 70% | 50&5% |

*Terms, 60 days: 2% cash 10 days. Factory shipments generally delivered.*
See also Eave Troughs.

## Coolers, Water—

L. & G. Mfg. Co.:

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Galvanized, ea. | $1.85 | $2.00 | $2.25 | $2.90 | $3.90 |

Galvanized, Lined, side handles,

| Gal. | 2 | 3 | 4 | 6 | 8 |
|---|---|---|---|---|---|
| Each | $1.95 | $2.15 | $2.40 | $3.30 | $4.15 |

White Enameled..... 10%
Agate Lined..... 10%

## Coppers' Tools—

See *Tools, Coopers'.*

## Coppers, Soldering—

*Soldering Coppers, 3 lb. to pair and heavier, 22@25¢; lighter than 3 lb. to pair..... 24@27¢*

## Cord—Sash—

*Braided, Drab..... lb. 35¢*
*Braided, White, Com., Nos. 8 to 12, 20¢; No. 7, 20½¢; No. 6, 21½¢. In lots of 12 doz. or over, 1 cent less per pound.*
*Cable Laid Italian, lb., No. 18. 37¢*
*Italian, lb., A, No. 18, 25¢; B, 22¢*
*Common India..... lb., 11@11½¢*
*Cotton Sash Cord, Tw'ted. 18@20¢*
*Patent Russia..... lb.... 20¢*
*Cable Laid Russia..... lb... 21¢*
*India Hemp, Br'd'd..... lb... 21¢*
*India Hemp, Twisted... lb. 13@14¢*
*Patent India, Twisted.. lb... 17¢*
Pearl Braided, cotton, No. 6, ℔ lb. 27½¢; No. 7, 26½¢; Nos. 8 to 12, 26¢
Eddystone, Braided, Nos. 8 to 12, 26¢; 7, 26½; 6, 27½¢
Harmony Cable Laid Italian, Nos. 7 to10..... ℔ lb 23¢
Pullman:
Wire Sash Cord..... 10%
Sash Cord Attachments, per 100..$2.00
Samson, Nos. 8 to 12:
Braided, ℔ lb., Drab Cotton, 55¢; Italian Hemp, 40¢@ 50¢; Linen, 65¢; White Cotton, 50¢; Spot Cord..... 50¢
Massachusetts, White... ℔ lb 40¢
Massachusetts, Drab... ℔ lb 45¢
} 15%
Phoenix, White, Nos 8 to 12.... 27¢
Silver Lake, per lb.:
A, Drab, 45¢; A, White, 40¢; B, Drab, 40¢; B, White, 35¢; Italian Hemp, 40¢; Linen....57½¢
See also Chain and Ribbon.

## Wire, Picture—

*Full Length..... 90@—%*
*Short Length..... 90&20@—%*
Hendryx Standard Wire Picture Cord, old list, 85&10%
Turner & Stanton Co. Wire Picture Cord ..... 85&10%

## Cradles—

*Grain ..... 40&12½%*

## Crayons—

*White Round Crayons, Cases, 100 gro., $6.50@$7.50 at factory, but lower prices made by jobbers.*
Zelnicker's Lumber: ℔ gro.
White and Purple, Indelible....$7.50
Blue, Red, Green, Yellow and Terra Cotta, $6.50; Black.....$4.50
Giant Lumber, 5¼ in. x 15-16 in. round, all colors, $12.00; Indelibles, $14.00; Blacks.....$10.00
Genuine Soapstone, Metal Workers', 5 in. x ¼ in. Round, $2.50; 5 in. x ¼ in. Square, $1.75; 5 x ½ x 3-16, $2.50; 5 x 1¼ x 3-16.....$3.00
Suremark, Black, $2.25; Blue, Red and Yellow.....$2.50

## Crooks, Shepperds'—

Fort Madison, per doz., Heavy, $5.50; Light ..... $3.00

## Crow Bars—See *Bars, Crow.*

## Cultivators—

Victor Garden..... 50%

## Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847..℔ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor..... ℔ doz. $3.00
Wm. Rogers & Son..... ℔ doz. $2.50

## Cutters—Glass—

H. H. Mayhew Co..... 40%
Red Devil..... 60%
B. Mfg. Co..... 40%
Woodward ..... 50%

## Meat and Food—

American ..... 30%

| Nos. | 401 | 402 | 403 | 404 | 405 | 406 | 407 |
|---|---|---|---|---|---|---|---|
| Each | $5 | $7 | $10 | $12 | $25 | $50 | $60 |

Enterprise:

| Nos. | 5 | 10 | 12 | 22 | 32 | |
|---|---|---|---|---|---|---|
| Each | $2 | $3 | $2.75 | $4.50 | $6 | 25@25&7½% |

No. 202, $1.50..... 40&7½%
P., S. & W. Co.:
Dixon's ..... ℔ doz. 33⅓%

| Nos. | 1 | 2 | 3 |
|---|---|---|---|
| | $14.00 | $17.00 | $19.00 | $30.00 |

Ideal ..... 40@40&5%
Hales ..... 60&10&5%
Little Giant..... ℔ doz. 40@50%

| Nos. | 305 | 310 | 312 | 320 | 322 |
|---|---|---|---|---|---|
| | $35.00 | $48.00 | $44.00 | $72.00 | $68.00 |

New Triumph No. 605, ℔ doz. $24.00.. 40&10%
Russwin Food, No. 1, $24.00; No. 2, $27.00 ..... 45&10&10%
$15.00 $18.00
Enterprise Beef Shavers..... 25@30%

## Slaw and Kraut—

Henry Disston & Sons:
Slaw and Kraut Cutters..... 35%
Corn Graters..... 30%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....℔ doz. $3.00
Combined Slaw Cutter and Corn Grater ..... ℔ doz. $4.00

## Tobacco—

*All Iron, Cheap... doz, $4.25@4.50*
Enterprise ..... 25@30%
National, ℔ doz., No. 1, $21; No. 2, $18 ..... 40%

## Diggers, Post Hole, &c—

Disston's:
Rapid, ℔ doz., $24.00..... 25%
Samson, ℔ doz., $34.00..... 25%
Iwan's Imp'ved Post Hole Auger..40%
Vaughan Pattern Post Hole Augers, ℔ doz., $7.00
Perfection Post Hole Diggers, ℔ doz. ..... $8.75
Split Handle Post Hole Diggers, ℔ doz., $7.75
Hercules Pattern, ℔ doz..... $10.00
Kohler's, ℔ doz., Universal, $15.00; Little Giant, $12.00; Hercules, $10.00; Invincible, $9.00; Rival, $8.50; Pioneer..... $7.50
Never-Break Post Hole Diggers, ℔ doz., $24.00..... 60%

## Dividers—See *Compasses.*

## Drawing Knives—

See *Knives, Drawing.*

## Dressers Emery Wheel—

Sterling Emery Wheel Dressers..... 35%
Sterling Wheel Dresser Cutters..... 35%

## Drills and Drill Stocks—

*Blacksmith's Common Drilling Machines ..... $1.50@1.75*
Breast, Millers Falls..... 15&10%
Breast, P., S. & W..... 33⅓%
Goodell Automatic Drills.50&10@60&10%
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis..... 25%
Ratchet, Parker's..... 40%
Ratchet, Weston's..... 40%
Ratchet, Weston's, Style H Improved ..... 40%
Ratchet, No. 012..... 40%
Ratchet, Celebrated..... 40%
Ratchet, Whitney's, P., S. & W., 50&5%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00..... 33⅓%

## Twist Drills—

*Bit Stock..... 70@70&5%*
*Taper and Straight Shank, 60&10@70%*

## Drivers, Screw—

*Screw D'ver Bits, per doz. 45@50¢*
Balsey's Screw Holder and Driver, ℔ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9 ..... 50%
Buck Bros.' Screw Driver Bits..... 30%
Champion ..... 50%
Disston's ..... 70%
Fray's Hol. H'dle Sets, No. 3, $12..50%
Ford's Brace Screw Drivers....40&10%
Gay's Double Action Ratchet..... 35%
Goodell's Auto..... 65@65&10%
Mayhew's Black Handle..... 40%
Mayhew's Monarch..... 40%
Millers Falls, Nos. 20 and 21....25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
Smith & Hemenway Co., Neverturn, 66⅔%; Elmora, 60%; Star, 30&10%
Swan's:
Nos, 7565 to 7568, 50%; No. 7540, 40&10%

## Eave Trough, Galvanized—

| | Gal. Steel. | Charcoal. Iron. |
|---|---|---|
| *Territory* | | |
| *Northeastern* | 75&10&5% | 60&20% |
| *Eastern* | 80&2½% | 60&20% |
| *Pittsburgh* | 80&20% | 65&10% |
| *Central* | 80&10&10&2½% | 65&10% |
| *Northwestern* | 80&10&10% | 65&10% |
| *Western* | 80&10% | 60&10&5% |
| *Tennessee* | 80&5% | 60&10&5% |
| *Southern* | 80% | 60&10&5% |
| *Southwestern* | 75&10&2½% | 60&5% |

*Terms.—2% for cash. Factory shipmeets generally delivered.*
*Note.—Lower prices are made in some sections.*
See also Conductor Pipe and Elbows.

## Elbows and Shoes—

*Factory shipments, all territories:*

| | Galv. Steel and Galv. C. I. Standard Gauge |
|---|---|
| *No. 26* | 85&85&10% |
| *No. 24* | 50% |
| *No. 24* | 27% |
| *No. 22* | 10% |

## Elbows, Stove Pipe—

Edwards, Standard Blue....40&10&10%
Edwards, Royal Blue..... 40&10&10%
Reeves, Dover, one piece..... 40&10%

## Emery, Turkish—

| | 4 to 46: | 5½ to 220: | Flour. |
|---|---|---|---|
| *Kegs ..... lb.* | 5 ¢ | 5½¢ | 3½¢ |
| *½ Kegs..... lb.* | 5½¢ | 5¾¢ | 3¾¢ |
| *¼ Kegs..... lb.* | 5½¢ | 6 ¢ | 4 ¢ |
| *10-lb. cans, 10 in case....* | 6½¢ | 7 ¢ | 6 ¢ |
| *10-lb. cans, less than 10....* | 10 ¢ | 10 ¢ | 8 ¢ |
| *Less quantity..* | 10 ¢ | 10 ¢ | 8 ¢ |

*NOTE.—In lots 1 to 3 tons a discount of 10% is given.*

## Extractors, Lemon Juice—

—See *Squeezers, Lemon.*

## Fasteners, Blind—

Zimmerman's .....50&10%
Walling's .....40&10%
Upson's Patent.....40%

### Cord and Weight—

Ives and Titan.....33⅓%

### Corrugated—

Acme Corrugated Fasteners.....70%

### Faucets—

*Cork Lined.....50&10@60%*
*Metallic Key, Leather Lined, 60&10@70%*
*Red Cedar.....40&5@40&10&5%*
*Petroleum .....70&10@75%*
B. & L. B. Co.:
Metal Key.....60&10%
Star .....60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key.50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I. X. L. Cork Lined...50%
John Sommer's Reliable Cork Lined.. 60&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar.....50%
John Sommer's Perfection, Cedar.....40%
Self Measuring:
Enterprise, ℔ doz. $36.00.....40&10%
Lane's, ℔ doz. $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

### Felloe Plates—

See *Plates, Felloe.*

### Files— Domestic—

*List Nov. 1, 1899.*
*Best Brands.....70&10@75&10%*
*Standard Brands.....75&10@80%*
*Lower Grade...75&10&10@80&10%*

### Imported—

*Stubs' Tapers, Stubs' list, July 24, '97.....33 1-3@40%*

### Fixtures, Fire Door—

Allith Underwriters' Approved.....50%
Richards Mfg. Co.:
Universal, No. 103; Special, No. 104.....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

### Grindstone—

*Net Prices:*

| *Inch* | *15* | *17* | *19* | *21* |
|---|---|---|---|---|
| *Per doz.* | *$3.60* | *3.85* | *4.15* | *4.65* |

P., S. & W. Co.....25%
Reading Hardware Co.....60%

### Fodder Squeezers—

See *Compressors.*

### Forks—

*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*

Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....60&20%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....60&10%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley.....40%
Plated.—See Spoons.

### Frames— Wood Saw—

*White, S'g't Bar, per doz.75@80¢*
*Red, S'g't Bar, per doz..$1.00@1.25*
*Red, Dbl. Brace, per doz.$1.40@1.50*

### Freezers, Ice Cream—

| *Qt.* | *1* | *2* | *3* | *4* | *6* |
|---|---|---|---|---|---|
| *Each* | *$1.25* | *$1.60* | *$1.90* | *$2.20* | *$2.80* |

### Fruit and Jelly Presses—

See *Presses, Fruit and Jelly.*

### Fry Pans—See *Pans, Fry.*

### Fuse— *Per 1000 Feet.*

*Hemp .....$2.75*
*Cotton .....3.20*
*Waterproof Sgl. Taped..3.65*
*Waterproof Dbl. Taped..4.40*
*Waterproof Tpl. Taped..5.15*
} Extra 10&2½%

## Gates, Molasses and Oil—

*Stebbins' Pattern.....80@80&5%*

### Gauges—

*Marking, Mortise, &c..50@50&10%*
Chapin-Stephens Co.:
Marking, Mortise, &c.....50&50&10%
Disston's Marking, Mortise, &c..67½%
Wire, Brown & Sharpe's.....33⅓%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....33⅓%

### Gimlets— Single Cut—

*Numbered assortments, per gro.*

*Nail, Metal, No. 1, $2.00; 2, $2.30*
*Spike, Metal, No. 1, $4.00; 2, $4.30*
*Nail, Wood Handled, No. 1, $2.30; 2, $2.60*
*Spike, Wood Handled, No. 1, $4.30; 2, $4.60*

### Glass, American Window

See *Trade Report.*

### Glasses, Level—

Chapin-Stephens Co.....65@65&10%

### Glue, Liquid Fish—

*Bottles or Cans, with Brush... 25&10@30%*
Elwell's .....60%

### Grease, Axle—

*Common Grade....gro. $6.00@6.50*
Dixon's Everlasting, 10-lb pails, ea. 85¢; in boxes, ℔ doz., 1 lb, $1.20; 2 lb.....$2.00
Helmet Hard Oil.....25%

### Griddles, Soapstone—

Pike Mfg. Co.....33⅓@33⅓&10%

### Grinders—

Royal Mfg. Co.:
Alundum Grinding Machines, each, Nos. 01, $1.75; 1A, $2.50; 10, $5.00 .....30%
Alundum Sickle Grinders, each, Nos. 20, $5.00; 20A, $6.00; 20A Combined, $6.50.....30%
Alundum Disc Grinders, each, $2.50 .....30%

### Grindstones—

Pike Mfg. Co.:
Improved Family Grindstones, ℔ inch, ℔ doz., $2.00.....33⅓%
Richards Mfg. Co., Elt and Cycle, Ball Bearing, mounted.....40%

### Grips, Nipple—

Perfect Nipple Grips.....40&10&2%

## Halters and Ties—

*Cow Ties.....60&5@60&10%*
Bridgeport Chain Co.:
Triumph Coil and Halters..35&2½@50%
Brown Coil and Halters...45@50&5%
Brown Cow Ties.....50&5@50&10&5%
Brown Tie Outs.....70&10@75&5%
Covert Mfg. Co.:
Web .....30&2%
Jute Rope.....35%
Sisal Rope.....20%
Cotton Rope.....45%
Hemp Rope.....45%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters..45@50&5%
Niagara Cow Ties....45&5@50&10&5%

### Hammers—

### Handled Hammers—

Heller's Machinists'...55&10@55&10&5%
Heller's Farriers'.....40&5@40&10&5%
Peck, Stow & Wilcox Co.:
Crucible Steel.....40&10%
Farriers' .....40&10%
Riveting .....40&10%
Machinists' .....60&10%
Blacksmiths' .....50%
Fayette R. Plumb:
A. E. Nail.....40&2½@40&12½%
Eng. and B. S. Hand.50&10&5@60&5%
Machinists' Hammers.....60@60&10%
Rivet and Tinners'.40&7½@40&12½&5%

### Heavy Hammers and Sledges—

*Under 3 lb., per lb., 50¢...80&10%*
*3 to 5 lb., per lb., 40¢.....80&10%*
*Over 5 lb., per lb., 30¢.....*
*Over 5 lb., per lb., 30¢.80&10&10%*

### Handles—

### Agricultural Tool Handles

*Axe, Pick, &c....60&10@60&10&5%*
*Hoe, Rake, &c.....40%*
*Fork, Shovel, Spade, &c.:*
*Long Handles.....40%*
*D Handles.....40%*

### Cross-Cut Saw Handles—

Atkins' .....40%
Champion .....50%
Disston's .....50%

### Mechanics' Tool Handles—

*Auger, assorted...gro. $3.00@$3.50*
*Brad Awl.....gro. $1.65@$1.75*
*Chisel Handles, Ass'd, per gro.:*
*Tanged Firmer, Apple, $2.40@ $2.65; Hickory.....$2.15@2.40*
*Socket Firming, Apple, $1.75@ $1.95; Hickory....$1.60@$1.75*
*Socket Framing, Hickory, $1.60@$1.75*
*File, assorted.....gro. $1.30@$1.40*
*Hammer, Hatchet, &c. 60&10@60&10&5%*
*Hand Saw, Varnished, doz. 80&85¢; Not Varnished...65@75¢*
*Plane Handles:*
*Jack, doz..35¢; Fore, doz..45¢.*
Chapin-Stephens Co.:
Carving Tool.....30@30&10%
Chisel .....60@60&10%
File and Awl.....60@60&10%
Saw and Plane.....30@30&10%
Screw Driver.....30@30&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ℔ gro. $0.85@$1.50
J. L. Osgood:
Indestructible File and Tool. ℔ gro., No. 1, $8.00; No. 2, $8.50; No. 3, $9.00; No. 4, $9.50; No. 5, $10.00.....gro. lots 10%
W. A. Zelnicker Supply Co.:
Hammer, ℔ doz., 12 in., $2.00; 14 in., $2.00; 16 in., $2.30; 18 in., $2.50; 20 in., $2.70; 22 in., $3.00; 24 in., $3.30; 26 in., $3.50; 30 in., $3.80.
Sledge, ℔ doz., oval, 30 in., $3.80; octagon, 30 in., $3.80; oval, 36 in., $4.00; octagon, 36 in., $4.00.
Axe, ℔ doz., 28 to 34 in., $5.60; 36 in., $5.80.
Adze, ℔ doz., 36 in., $5.80; 38 in., $7.80.
Pick, ℔ doz., R. R., 36 in., $8.00; coal, 34 in., $5.80.
Hatchet, ℔ doz., 12 to 14 in., $2.00.
} 2%

### Hangers—

*NOTE.—Barn Door Hangers are generally quoted per pair, without track and Parlor Door Hangers per double set with track, &c.*

Allith Mfg. Co.:
Reliable, Nos. 1 and 2; Allith, No. 3; Allith Adjustable. No. 6, Reliable Parlor Door.....30%
Chicago Spring Butt Co.:
Friction .....25%
Oscillating .....25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator .....30%
Railroad .....50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&2½%
Roller Bearing.....70&2½%
Griffin Mfg. Co.:
Solid Axle, No. 10, $12.00..60&10%
Roller Bearing, No. 11, $15.00, 60&10%
Roller Bearing, Ex. Hy., No. 22, $18.00.....60&10%
Bull Dog, $24.00.....70%
Lane Bros. Co.:
Parlor, Ball Bearing, $4.00; Standard, $3.15; No. 105, $2.85; New Model, $2.80; New Champion .....$2.25
Barn Door, Standard.....60&10%
Hinged .....net $6.08
Covered .....60&5%
Special .....70&5%
Lawrence Bros.:
Advance .....55&10%
Cleveland .....70&7½%
Clipper, No. 75.....60%
Crown .....55&10%
Cyclone, No. 40.....net $6.50
Tandem, No. 50.....net $7.50
New York.....55&10%
McKinney Mfg. Co.:
Roller Bearing, Nos. 1 and 2.70%
Anti-Friction .....60%
Hinged Hangers, King Charm.60%
Richards Mfg. Co.:
Hangers, Nos. 47, 48, 147, 247, 60&5%
Pioneer Wood Track, No. 3. $2.25
Roller B'r'g St'l Track No. 12.$2.20
Roller B'r'g St'l Track No. 13.$2.50
Roller B'r'g, Nos. 39, 41, 43, 70&7½%
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8....$2.25
Auto Adj. Track No. 22.—50&5%
Trolley B. D. No. 17, $1.25; F. D. No. 120, $2.25; No. 121, $2.45; No. 150.....$2.50
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 41..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&5%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.25
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24, $1.30; No. 27, $1.40; No. 28.....$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2.70&7½%
Anti-friction, No. 42; No. 44, sizes 2½ and 3.....60%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Myers' Stayon Hangers.....60%

Extra 10% often given.

### Hangers— Garment—

Pullman Trouser, ℔ gro., No. 1, $9.00; No. 4, $24.00; No. 5, $16.50; No. 8, Black Enamel, $7.50; No. 10, $21.00; No. 12, $8.00; No. 15, Rods, $9.00; No. 18, Loops.....$10.00
Victor Folding.....℔ gro. $9.60

### Gate—

Myers' Patent Gate Hangers, ℔ doz. net .....$1.50

### Joist and Timber—

Lane Bros. Co.....30%

### Hasps—

Griffin's Security Hasp.....50&10%
McKinney's Perfect Hasp, ℔ doz..60%

### Hatchets—

*Regular list, first qual..40&2½@—*
*Second quality.....50&5@—*

### Heaters, Carriage—

Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....25%
Clark Coal, ℔ doz., $0.75.....20%

### Hinges—

### Blind and Shutter Hinges

*Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)*

| *No.* | *1* | *3* | *5* |
|---|---|---|---|
| *Doz. pair* | *$0.75* | *1.35* | *2.70* |

*Mortise Shutter: (L. & P., O. S., Acme, &c.)*

| *No.* | *1* | *1½* | *2* | *2½* |
|---|---|---|---|---|
| *Doz. pair* | *$0.70* | *.65* | *.60* | *.55* |

*Mortise Reversible Shutter (Buffalo, &c.):*

| *No.* | *1* | *1½* | *2* |
|---|---|---|---|
| *Doz. pair* | *$0.70* | *.65* | *.60* |

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.:
Hale & Benjamin Automatic Blind Hinges .....20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Stanley's Steel Gravity Blind Hinges, No. 1647½, ℔ doz. sets, without screws, $0.95; with screws, $1.25.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&5%
Acme, Lull & Porter.....75%
Queen City Reversible.....75%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&5%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&5%
Tip Pat'n, No. 1.....75&10%
No. 3.....75&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....70&10&5%
Shepard's Double Locking.....75%
Champion Gravity Locking.....75&5%
Pioneer .....75&10%
Empire .....65%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60&10%

### Gate Hinges—

*Clark's or Shepard's—Doz. sets:*

| *No.* | *1* | *2* | *3* |
|---|---|---|---|
| *Hinges with L't'chs.* | *$2.00* | *2.70* | *5.00* |
| *Hinges only* | *1.40* | *2.05* | *3.80* |
| *Latches only* | *.70* | *.70* | *.35* |

*New England:*
*With Latch.....doz. ....@$2.00*
*Without Latch...doz. ....@$1.60*
*Reversible Self-Closing:*
*With Latch.....doz. ....@$1.75*
*Without Latch...doz. ....@$1.35*
*Western:*
*With Latch.....doz. $1.75*
*Without Latch.....doz. $1.15*
Wrightsville Hardware Co.:
Shepard's or Clark's Hinges and Latches, Hinges only or Latches only, Nos. 1, 2 or 3.....70%

### Pivot Hinges—

Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....50%

### Spring Hinges—

*Holdback, Cast Iron...$6.75@$7.00*
*Non-Holdback, Cast Iron$6.50@$6.75*
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....40%
Bardsley's Patent Checking.33⅓%
Bommer Bros.:
Bommer Ball Bearing Floor..40%
Bommer Spring Hinges.....40%
**No. 999 Wrot. Steel Hold Back, ℔ gr. $9.00**
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor..50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American .....30%
Columbia, ℔ gr., No. 14, $9.00; No. 18, $25.00
Columbia, Adj., No. 7, ℔ gr. $12.00
Columbian Hinges.....60&10%
Gem, new list.....30%
Clover Leaf and Acorn, gro. lots, $5.10; ½ gro. lots.....$6.00
Oxford, new list.....30
Floor Spring Hinges.....65&10%
Lawson Mfg. Co., Matchless....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges .....40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Chief Ball Bearing Floor Hinge .....50%
Ball Bearing Door.....25%
No. 777, Sheet Steel Holdb'k, ℔ gr. pr.....$9.00
Standard Mfg. Co.:
Champion Double Acting Door Hinge .....25&10&10%
Standard Double Acting Floor Hinge .....25&10&10%
Superior Spring Hinge Co.:
Superior Floor Hinges.....33⅓%

Extra 10% often given on most of these Hinges.

### Wrought Iron Hinges—

*Strap and T Hinges, &c., list December 20, 1904:*
*Light Strap Hinges..50&10%*
*Heavy Strap Hinges..60&5%*
*Light T Hinges.....50%*
*Heavy T Hinges.....40%*
*Extra Hvy. T Hinges.50&10%*
*Hinge Hasps.....33⅓%*
*Cor. Heavy Strap...60&5%*
*Cor. Ex. Heavy T...50&10%*
} Extra 10&7½%

*Screw Hook and strap.*
*6 to 12 in..lb. 3½¢*
*13 to 20 in..lb. 3½¢*
*22 to 36 in..lb. 3 ¢*

*Screw Hook and Eye:*
*¾ to 1 inch.....lb. 6½¢*
*⅝-inch.....lb. 7½¢*
*½-inch .....lb. 8½¢*

### Hitchers, Stall—

Covert Mfg. Co., Stall Hitchers..30&2%

### Hods— Coal—

| *M'f'gr's list, price per gross* *Inch* | *15* | *16* | *17* | *18* |
|---|---|---|---|---|
| *Galv. Open* | *$35* | *$39* | *$42* | *$46* |
| *Jap. Open* | *26* | *28* | *31* | *35* |
| *Galv. Funnel* | *43* | *48* | *52* | *56* |
| *Jap. Funnel* | *33* | *36* | *39* | *43* |

} 65%

### Masons' Etc.

Cleveland Wire Spring Co.:
Steel Brick, No. 102.....each $1.05
Steel Mortar, No. 158.....each $1.35

### Hoes— Eye—

*Scovil and Oval Pattern..... 60&10@60&10&10%*
*Grub, list Feb. 23 1903 70&10@70&10&10%*
D. & H. Scovil.....27½%
Am. Fork & Hoe Co. (Scovil Pattern) .....60%

### Handled—

*NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.*

Cronk's Weeding, No. 1, $2.00; No. 2, $2.50
Star Double Bit.....$3.20
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ₱ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....₱ doz. 40&5%
Junior Size.....₱ doz. $4.00
Ft. Madison Sprouting Hoe, ₱ doz., 60&10%
Ft. Madison Dixie Tobacco Hoe.....75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Handhoe.....75&5%
B, B, 6 in., Cultivator Hoe.....$3.40
B. B., 6½ in.....$3.50
Acme Wedding.....₱ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ₱doz.$5.25

### Hoisting Apparatus—

See *Machines, Hoisting.*

### Holders— Bit—

Angular, ₱ doz. $24.00.....45&10%

### Door—

Bardsley's, Iron, 40%; Brass and Bronze.....25%
Empire.....50%
Pullman.....25%
Richards Mfg. Co.: No. 117, Ever-ready, 40%; Nos. 118, 119, Sure Grip.....50%
Superior.....33⅓%

### File and Tool—

Nicholson File Holders and File Handles.....33⅓@40%

### Fruit Jar—

Triumph Fruit Jar Holder, ₱ gross, $10.80; ₱ doz.....$1.25

### Trace and Rein—

Fernald Double Trace Holder, ₱ doz. pairs.....$1.25
Dash Rein Holder, ₱ doz. pairs..$1.25

### Hones—Razor—

Pike Mfg. Co., Belgian and Swaty, 50%; German.....33⅓%

### Hooks—Cast Iron—

Bird Cage, Reading.....40%
Clothes Line, Reading List.....40%
Coat and Hat, Reading.....45&20%
Coat and Hat, Wrightsville.....60&5%
Harness, Reading List.....40%

### Wire—

*Belt*.....80%
*Wire C. & H. Hooks*.....80%
Bradley Metal Clasp Wire, Coat and Hat, 70&10%; Ceiling.....70&10%
Columbian Hdw. Co., Gem.....70&5%
Parker Wire Goods Co., King..70&10%
Wire Goods Co.: Acme, 60&10%; Chief, 70%; Crown, 75%; Czar, 65%; V Brace, 75%; Czar Harness, 50&10%.

### Wrought Iron—

*Box, 6 in., per doz., $1.00; 8 in., $1.25; 10 in., $2.50.*
*Cotton*.....*doz. $1.05@$1.25*
Wrought Staples, Hooks, &c.—See Wrought Goods

### Miscellaneous—

*Hooks, Bench, see Stops, Bench.*
*Bush, Light, doz., $6.20; Medium, $6.75; Heavy, $7.65*
*Grass, best, all sizes, per doz.$3.00*
*Grass, common grades, all sizes, per doz*.....*$1.50*
*Whiffletrees*.....*lb.5¾@6¢*
*Hooks and Eyes:*
*Brass*.....*60@60&10%*
*Malleable Iron*.....*70@70&10%*
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Ft. Madison Cut-Easy Corn Hooks, ₱ doz. $3.25 net
Turner & Stanton Co. Cup and Shoulder.....80&10%
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

### Horse Nails—

See *Nails, Horse.*

### Horseshoes—

See *Shoes, Horses.*

### Hose, Rubber—

*Garden Hose, ¾-inch:*
*Competition*.....*ft. 5@ 6¢*
*3 ply Guaranteed*.....*ft. 8@ 9¢*
*4 ply Guaranteed*.....*ft. 10@11¢*
*Cotton Garden, ¾-in., coupled:*
*Low Grade*.....*ft. 8@ 9¢*
*Fair Quality*.....*ft. 10@11¢*

### Irons—Sad—

*From 4 to 10*.....*lb. 3@3¼¢*
*B. B. Sad Irons*.....*lb.3¼@3¼¢*
*Wrs. Potts', cents per set:*

| | Nos. 50 | 55 | 60 | 65 |
|---|---|---|---|---|
| *Jap'd Tops* | 85 | 80 | 93 | 91 |
| *Tin'd Tops* | 88 | 85 | 98 | 95 |

*New England Pressing*..*lb.3¾@4¢*

### Bar and Corner—

Richards Mfg. Co., Bar, 60&10%; Corner.....60%

### Pinking—

*Pinking Irons*.....*doz.60¢*

### Irons, Soldering

See *Coppers.*

### Jacks, Wagon—

Covert Mfg. Co.:
Auto Screw.....30&2%; Steel, 45%
Lockport.....5[illegible]
Lane's Steel.....30&5%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

### Ladder—

Richards Mfg. Co., Ladder Jacks..50%

### Kettles—

*Brass, Spun, Plain*.....*20@25%*
Enameled and Cast Iron—See Ware, Hollow.

### Knives—

### Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co.....60%

### Corn—

Columbian Cutlery Co., Wilcut Brand Knives and Hooks.....60%
Withington Acme, ₱ doz., $2.65; Dent, $2.75; Adj. Serrated, $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

### Drawing—

*Standard List*.....*80&10@—%*
C. E. Jennings & Co., Nos. 45, 46, 25&7½%
Jennings & Griffin, Nos. 41, 42, 66⅔&7½%
Swan's.....66⅔@70%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

### Hay and Straw—

*Serrated Edge, per doz.$3.50@5.75*
Iwan's Sickle Edge.....₱ doz. $9.50
Iwan's Serrated.....₱ doz. $10.00

### Miscellaneous—

*Farriers'*.....*doz.$2.60@3.55*
Wostenholm's.....₱ doz. $3.00@3.25

### Knobs—

*Base, 2½-inch, Birch, or Maple, Rubber Tip*.....*gro.$1.25@$1.40*
*Carriage, Jap., all sizes*.....*gro. 40@45¢*
*Door, Mineral*.....*doz. 65@70¢*
*Door, Por. Jap'd*.....*doz. 70@75¢*
*Door, Por. Nickel*..*doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c.15%

### Lacing, Leather—

See *Belting, Leather—*

### Ladders, Store, &c.—

Allith Mfg. Co., Reliable.....50%
Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

### Ladles, Melting—

L. & G. Mfg. Co. (low list).....20%
P. S. & W.....40&10%
Reading.....60%

### Lanterns—Tubular—

*Regular, No. 0*.....*doz.$4.35@4.50*
*Side Lift, No. 0*.....*doz.$4.60@4.75*
*Hinge Globe, No. 0.doz.$4.60@4.75*
*Other Styles*.....*40@40&10%*

### Bull's Eye Police—

*3-inch*.....*$4.25@4.50*

### Latches—Thumb—

*Roggin's Latches, with screw*..*doz. 35@40¢*

### Door—

Allith Mfg. Co., Reliable and Alligator, 50%; Reliable Cold Storage, 50%
Cronk & Carrier Mfg. Co., No. 101, ₱ doz. $2.90
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50

### Leaders, Cattle—

*Small*.....*doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, 45%; Hemp, 45%; Jute, 35%; Sisal, 20%.

### Leathers, Pump—

See *Pumps—*

### Lifters, Transom—

R. & E.....10%

### Lines—

| *Wire Clothes, Nos.* | *18* | *19* | *20* |
|---|---|---|---|
| *100 feet*..... | *$2.50* | *2.25* | *2.00* |
| *75 feet*..... | *$2.10* | *1.80* | *1.65* |

Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Solid Braided Masons'.....30%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....₱ gr, 20%
Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%
Turner & Stanton Co.:
Solid Braided Chalk, Masons' and Awning Lines.....40%
Clothes Lines White Cotton.....20%
Shade Cord, Cotton or Linen....20%

### Locks—Cabinet—

*Cabinet Locks*.....*33⅓%*

### Door Locks, Latches, &c.—

*NOTE.—Net Prices are very often made on these goods.*
Reading Hardware Co.....40%
R. & E. Mfg. Co.....10%

### Padlocks—

R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%

### Sash, &c.—

Ives' Patent:
Bronze and Brass, 55&5%; Crescent, 60%; Iron, 60%; Window Ventilating, 40&20%; Robinson Pat. Ventilating Sash Lock, 33⅓%.
Pullman Patent Ventilating Lock..25%
Reading Sash Locks.....[illegible]%

### Machines—Boring—

*Com. Upr't, without Augers.*.....*$2.00@2.25*
*Com. Angl'r, without Augers*, *$2.25@2.50*
Swan's Improved.....40&10%
Jennings', Nos. 1 and 4.....25&7½%
Millers' Falls.....5.75
Snell's, Upright, $2.65; Angular, $2.90

### Corking—

Reisinger Invincible Hand Power.... ₱ doz. $48.00

### Fence—

Williams' Fence Machines....each, $5.50

### Hoisting—

Moore's Anti-Friction Chain Hoist.30%
Moore's Hand Hoist, with Lock Brake.....20%
Moore's Cyclone, High Speed Chain Hoist.....25%

### Ice Cutting—

Chandler's.....12½%

### Washing

| Boss Washing Machine Co.: | Per doz. |
|---|---|
| Boss No. 1 | $57.00 |
| Boss Rotary | $57.00 |
| Champion Rotary Banner No. 1 | $57.00 |
| Standard Champion No. 1 | $50.00 |
| Standard Perfection | $27.00 |
| Cincinnati Square Western | $33.00 |
| Uneeda American, Round | $33.60 |

### Mallets—

*Hickory*.....*45&5@50%*
*Lignumvitæ*.....*45&5@50%*
*Tinners' Hickory and Applewood*.....*doz. 45&5@50%*

### Mangers, Stable—

Swett Iron Works.....50%

### Mats, Door—

Acme Flexible Steel.....50%
Elastic Steel (W. G. Co.), new list.50%

### Mattocks—

See *Picks and Mattocks.*

### Milk Cans—See *Cans, Milk.*

### Mills, Coffee, &c.—

Enterprise Mfg. Co.....20@25%
National list Jan. 1, 1902.....30%
Parker's Columbia and Victoria..33⅓%
Parker's Box and Side.....50&10%
Swift, Lane Bros. Co.....30%

### Motors, Water—

Divine's Red Devil.....30%
Lippincott's.....30%

### Mowers, Lawn—

*NOTE.—Net prices are generally quoted*
*Cheapest, 10-in., $2.00; 12-in., $2.10, etc.*
*Cheap, 10-in., $2.25; 12-in., $2.45, etc.*
*Better Grade, 10-in., $3.00; 12-in., $3.25, etc.*

| | *12* | *14* | *16* | *18-in.* |
|---|---|---|---|---|
| *High Grade*.... | *$4.50* | *4.75* | *5.00* | *5.25* |

Continental.....60%
Great American.....70%
Great American Ball B'r'g, new list.70%
Quaker City.....70%
Pennsylvania.....60%
Pennsylvania, Jr., Ball Bearing, 50&10&5%
Pennsylvania Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel.....70%
Style B, Low Wheel.....70%
Style C, High Wheel, spcl. list, 70&10%
Style D, High Wheel, spcl. list..70%
Philadelphia:
Styles M., S., C., K., T....70&10&5%
Style A, all Steel.....60&10&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list.40%
Horse.....40&5%
Pony.....40&5%
36-in. Horse.....30&10%
Eagle Horse.....30&5%
I. X. L. Horse.....50%

### Nails—

*Wire Nails and Brads, Miscellaneous*.....*85&5@85&10%*
*Cut and Wire. See Trade Report.*
*Hungarian, Finishing, Upholsterers' &c.* See *Tacks.*

### Horse—

| | Nos. 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Anchor | 23 | 21 | 20 | 19 | 18 | ...40&5% |
| Coleman | 13 | 12 | 12 | 11 | 11 | .....net |
| New Haven | 23 | 21 | 20 | 19 | 18 | ...40&5% |
| Livingston | 19 | 18 | 17 | 16 | 16 | .....10% |

Western.....₱ lb 8½¢
*Jobbers' Special Brands*.....*per lb.9@10¢*

### Picture—

| | 1½ | 2 | 2½ | 3 | *in.* |
|---|---|---|---|---|---|
| *Brass H'd* | *.45* | *.55* | *.60* | *.70* | *.. gro* |
| *Por. Head* | *.. 1.10* | *1.10* | *1.10* | *..* | *gro* |

### Nippers—

See *Pliers and Nippers.*

### Nuts—*Blank or Tapped.*

| *Cold Punched:* | *Off Hd* |
|---|---|
| *Square* | *5.20¢* |
| *Hexagon* | *5.80¢* |
| *Square, C., T. & R* | *5.80¢* |
| *Hexagon, C., T. & R* | *6.30¢* |
| *Hot Pressed:* | |
| *Square* | *5.80¢* |
| *Hexagon* | *6.30¢* |

### Oakum—

*Best*.....*lb., 6½¢*
*U. S. Navy*.....*lb., 6¢*
*Navy*.....*lb., 5¢*
*Plumbers' Spun Oakum*..*2¾@3¢*

### Oil Tanks—See *Tanks, Oil.*

### Oilers—

*Steel, Copper Plated*.....*75%*
Cause or Paragon:
*Brass and Copper*.....*50&10%*
*Zinc*.....*65&10%*
Malleable, Hammers' Improved, Nos. 11, 12 and 13, 20%; Old Pattern, Nos. 1, 2, 3, 50%.
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%
Maple City Mfg. Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

### Openers—Can—*Per doz.*

*Sprague, Iron Handle*.....*50@35¢*
*Sprague, Wood Handle*...*35@40¢*
*Sardine Scissors*.....*$1.75@$3.00*
Yankee Can and Bottle Opener, ₱ doz., net, $0.75; Little Gem, ₱ doz., net.....$0.65

### Egg—

Hartigan Nickel Plate, ₱ doz., $2.00; Silver Plate, $4.00.

### Packing—

*Asbestos Packing, Wick and Rope, any quantity*.....*20¢*

### Rubber—

*(Fair quality goods.)*

*Sheet, C. I.*.....*11@12¢*
*Sheet, C. O. S.*.....*11@12¢*
*Sheet, C. B. S.*.....*12@13¢*
*Sheet, Pure Gum*.....*40@45¢*
*Sheet, Red*.....*40@50¢*
Jenkins' '96, ₱ lb. 80¢.....25%

### Miscellaneous—

*American Packing*...*lb. 7@10 ¢*
*Cotton Packing*.....*lb. 16@25 ¢*
*Italian Packing*.....*lb. 9@12½¢*
*Jute*.....*lb. 4@ 4½¢*
*Russia Packing*.....*lb. 8@11 ¢*

### Pails, Water, Well, &c.—

See *Buckets.*

### Pans—Dripping—

*Standard List*.....*65&7½@70%*
Edwards, Royal Blue.....65&7½%

### Fry—

*Common Lipped:*

| *Nos.* | *1* | *2* | *3* | *4* | *5* |
|---|---|---|---|---|---|
| *Per doz* | *$0.75* | *0.80* | *0.90* | *1.10* | *1.30* |

### Refrigerator, Galva.—

| *Inch* | *12* | *14* | *16* | *18* |
|---|---|---|---|---|
| *Per doz* | *$1.75* | *2.25* | *2.80* | *3.15* |

### Paper—Building Paper

*Asbestos:* *lb.*
*Roll Board or Building Felt, 5 to 30 lb., per 100 sq. ft.* *2½@3¢*
*Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lb., per 100 sq. ft.*.....*3½¢*
*Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.*.....*3¢*

*Per roll*

*Rosin Sized Sheathing: 500 sq. ft. Light weight, 25 lbs. to roll* *48@58¢*
*Medium weight, 30 lbs. to roll* *56@70¢*
*Heavy weight, 40 lbs. to roll* *75@78¢*
*Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.*
*Deafening Felt, 9, 6 and 4½ sq. ft. to lb. ton*.....*$54.50*
*Red Rope Roofing, 250 sq. ft. per roll*.....*$1.75*

### Tarred Paper—

*1 ply (roll 400 sq. ft.), ton*.... *$34.00@$38.00*
*2 ply, roll 108 sq. ft.*.....*65¢*
*3 ply, roll 108 sq. ft.*.....*88¢*
*Slater's Felt (roll 500 sq. ft.)*.*80¢*

### Sand and Emery—

*Flint Paper and Cloth.50&10@—%*
*Garnet Paper and Cloth*....*25%*
*Emery Paper and Cl'h..50&10@60%*

### Parers—Apple—

Goodell Co.:
Family Bay State.....₱ doz. $15.00
Improved Bay State.....₱ doz. $36.00
New Lightning.....₱ doz. $7.00
Turn Table '98.....₱ doz. $6.00
White Mountain.....₱ doz. $5.00
Bonanza Improved.....each $7.50
Dandy.....each $10.00
Eureka Improved.....each $20.00
New Century.....each $20.00
Ranger.....each $25.00
Livingston Nail Co.:
Daisy.....₱ doz. $4.00
Little Star.....₱ doz. $5.00
Rocking Table.....₱ doz. $6.20
Reading Hardware Co.:
Advance.....₱ doz. $4.00
Baldwin.....₱ doz. $4.00
Reading 72.....₱ doz. $3.25
Reading 78.....₱ doz. $6.25

### Potato—

Saratoga.....₱ doz. $7.00
White Mountain.....₱ doz. $6.00

### Picks and Mattocks—

*(List Jan., 1908.)*

*List*.....*70&10@70&10&10%*
Cronk's Handled Garden Mattock, ₱ doz., No. 2, $2.60; No. 3, $6.10.

### Pinking Irons—
See *Irons, Pinking.*

### Pins, Escutcheon—
*Brass* .....50@50&10%
*Iron, list Nov. 11, '05*..60@60&10%

### Pipe, Cast Iron Soil—
*Standard 2-6 in*.....60&5@—%
*Extra Heavy, 2-6 in*..70&5@—%
*Fittings, Standard and Heavy,* 70&10@75%

### Pipe, Merchant—

| | Consumers, Carloads. Steel. Blk. | Galv. | Iron. Blk. | Galv. |
|---|---|---|---|---|
| | % | % | % | % |
| ⅛ & ¼ *in*... | 64 | 48 | 62 | .. |
| ⅜ *in*..... | 66 | 52 | 64 | 50 |
| ½ *in*..... | 68 | 56 | 66 | 54 |
| ¾ *to 6 in*... | 72 | 62 | 70 | 60 |
| *7 to 12 in*.... | 69 | 54 | 67 | 52 |

### Pipe, Vitrified Sewer—
*Carload lots.*
*Standard Pipe and Fittings, 3 to 24 in., f.o.b. factory:*
*First-class* .....87%
*Second-class* .....90%

### Pipe, Stove—

| | Per 100 joints. C. L. | L. C. L. |
|---|---|---|
| Edwards' Nested: | | |
| 5 in., Standard Blue | $6.25 | $7.25 |
| 6 in., Standard Blue | 6.75 | 7.75 |
| 7 in., Standard Blue | 7.75 | 8.75 |
| 5 in., Royal Blue | 7.00 | 8.00 |
| 6 in., Royal Blue | 7.50 | 8.50 |
| 7 in., Royal Blue | 8.50 | 9.50 |
| Wheeling Corrugating Co.'s Nested: | | |
| 5 in., Uniform Color | $6.15 | $7.15 |
| 6 in., Uniform Color | 6.65 | 7.65 |
| 7 in., Uniform Color | 7.65 | 8.65 |

### Planes and Plane Irons—
#### Wood Planes—
*Bench, first qual*.....30@30&10%
*Bench, second qual*...40@40&10%
*Molding* .....25@25&10%
Chapin-Stephens Co.:
Bench, First Quality.....30%
Bench, Second Quality.....40%
Molding and Miscellaneous.....25%
Toy and German.....30%
Union .....60%

#### Iron Planes -
Chaplin's Iron Planes.....50&10%
Union .....60%

#### Plane Irons—
*Wood Bench Plane Irons, list Dec. 12, '06*.....25%
Buck Bros.....30%
Chapin-Stephens Co.....25%
Union .....50%
L. & I. J. White.....20&5@25%

### Planters, Corn, Hand—
Kohler's Eclipse.....per doz. $8.00

### Plates—
*Felloe* .....*lb.* 4@4¼¢

### Pliers and Nippers—
*Button Pliers*....75&5@75&10&5%
*Gas Burner, per doz., 6 in., $1.25 @ $1.50; 6 in., $1.45 @ $1.50.*

| *Gas Pipe*.. | 7 | 8 | 10 | 12-in. |
|---|---|---|---|---|
| | $2.00 | $2.25 | $2.75 | $3.50 |

Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....80%
Improved Button.....75&10%
Cronk's .....60%
No. 80 Linemen's.....50%
Stub's Pattern.....45%
Combination and others.....33⅓%
Heller's Farriers' Nippers, Pincers and Tools.....40&5@40&10&5%
P., S. & W. Tinners' Cutting Nippers .....40%
Wm. Scholihorn Co.:
Bernard, 35%; Elm City, 35%; Paragon, 50%; Lodi, 55%.
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds.....60%

### Plumbs and Levels—
Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10%
Chapin's Imp. Brass Cor..40@40&10%
Pocket Levels.....30@30&10%
Extension Sights.....30@30&10%
Machinists' Levels.....40@40&10%
Disston's Plumbs and Levels....60&10%
Disston's Pocket Levels.....60&10%
Stanley's Duplex.....35%
Woods' Extension.....33⅓%

### Points, Glaziers'—
*Bulk and 1-lb. papers*....*lb.* 9 ¢
*½-lb. papers*.....*lb.* 9½¢
*¼-lb. papers*.....*lb.* 10 ¢

### Police Goods—
*Manufacturers' Lists*...25@25&5%
Tower's .....25%

### Polish—Metal, Etc—
Prestoline Liquid, No. 1 (⅛ pt.) per doz., $3.00; No. 2 (1 qu.), $9.00. 40%
Prestoline Paste.....60%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, per doz. 50¢; per gro. $4.50; ½ lb boxes, per doz. $1.25; 1 lb boxes, per doz. $2.25.
U. S. Liquid, 8 oz. cans, per doz., $1.25.
Barkeepers' Friend Metal Polish, per doz., $1.75.

### Stove—
Black Eagle Benzine Paste, 5 lb cans, per lb 10¢
Black Eagle, Liquid, ½ pt. cans.. per doz. 75¢
Black Jack Paste, ¾ lb cans, per gr. $9.00
Black Kid Paste, 5 lb can....each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon's, per gr. $5.75.....10%
Dixon's Plumbago.....per lb 8¢
Fireside .....per gr. $2.50
Gem, per gr. $4.50.....10%
Japanese .....per gr. $3.50
Jet Black.....per gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. per doz. $1.50

### Poppers, Corn—
*1 qt. Square..doz.$0.80; gro.$8.75*
*1 qt. Round..doz.$0.90; gro.$10.00*
*1½ qt. Square.doz.$1.00; gro.$11.00*
*2 qt. Square..doz.$1.25; gro.$13.50*

### Post Hole and Tree Augers and Diggers—
See also *Diggers, Post Hole, &c.*

### Posts, Steel—
Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

### Potato Parers—
See *Parers, Potato.*

### Pots, Glue—
*Enameled* .....35&10%
*Tinned* .....30&10%

### Powder—
*In Canisters:*
*Duck, 1 lb*.....*each* 45¢
*Fine Sporting, 1 lb*....*each* 75¢
*Rifle, ½-lb*.....*each* 15¢
*Rifle, 1-lb*.....*each* 25¢
*In Kegs:*
*12½-lb. kegs*.....$3.50
*25-lb. kegs*.....$4.50
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50

| King's Smokeless: | Shot Gun. | Rifle. |
|---|---|---|
| Keg (25 lb bulk) | $12.00 | $15.00 |
| Half Keg (12½ lb bulk) | 6.25 | 7.75 |
| Quarter Keg (6¼ lb bulk) | 3.25 | 4.00 |
| Case 24 (1 lb cans bulk) | 14.00 | 17.00 |
| Half case 12 (1 lb c. bk) | 7.25 | 8.75 |

### Presses—
#### Fruit and Jelly—
Enterprise Mfg. Co.....20@25%
#### Seal Presses—
Morrill's No. 1, per doz., $20.00.....50%

### Pruning Hooks and Shears
See *Shears.*

### Pullers, Nail—
Cyclops .....60%
Miller's Falls, No. 3, per doz., $12.00.....33⅓&10%
Morrill's No. 1, Nail Puller, per doz. $20.00 .....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
The Scranton Co. Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B.....70%
Giant .....50%
Staple' Pullers, Utica and Davison .....60%

### Pulleys, Single Wheel—

| *Inch* | 1½ | 1¾ | 2 | 3 |
|---|---|---|---|---|
| *Awning or Tackle, doz.* | $0.30 | .45 | .60 | 1.05 |
| *Hay Fork, Swivel or Solid Eye. doz., 4 in., $1.25; 5 in., $1.55* | | | | |
| *Inch* | 2 | 2½ | 2½ | |
| *Hot House, doz.* | $0.65 | .85 | 1.20 | |
| *Inch* | 1¼ | 1½ | 1¾ | 2 |
| *Screw, doz.* | $0.16 | .19 | .23 | .30 |
| *Inch* | 1¾ | 2 | 2¼ | 2½ |
| *Side, doz.* | $0.25 | .40 | .55 | .60 |
| *Inch* | 1½ | 1¾ | 2 | 2½ |

### Sash Pulleys—
*Common Frame; Square or Round End, per doz, 1¾ and 2 in*.....17@20¢
*Auger Mortise, no Face Plate, per doz., 1¾ and 2 in*....20@21¢
Acme, No. 35..1¾ in., 19¢; 2 in., 21½¢
American Pulley Co.:
Wrought Steel American Plain Axle .....50&10%
Wrought Steel Eagle.....17@20¢
Top Notch, Electrically Welded, Nos. 3 and 4.....19¢
Fox-All-Steel, Nos. 3 and 4, 2 in.... per doz. 50%
Grand Rapids All Steel Noiseless..50%
Niagara, No. 25, 1¾ in., 19¢; 2 in.....20½¢
No. 26, Troy..1¾ in., 14½¢; 2 in., 16½¢
Star, No. 26..1¾ in., 19¢; 2 in., 20½¢
Tackle Blocks—See Blocks

### Pumps—
*Cistern* .....60%
*Pitcher Spout*.....75&5@75&10%
*Wood Pumps, Tubing, &c*.....50%
Barnes Dbl. Acting (low list)....40&5%
Barnes Pitcher Spout.....5&10%
Contractors' Rubber Diaphragm No. 2 B. & L. Block Co.....$16.00
Daisy Spray Pump.....per doz. $6.50
Flint & Walling's Fast Mail Hand, (low list).....50%
Flint & Walling's Fast Mail (low list) .....50%
Flint & Walling's Tight Top Pitcher, 75&10%
National Specialty Mfg. Co., Measuring, Nos. 2, $6.00; 3, $5.50.....50%
Myers' Pumps (low list).....40&5%
Myers' Power Pumps.....40&5%
Myers' Spray Pumps.....40&5%

### Pump Leathers—
*Plunger and Valve Leathers—Per gro.:*

| *No*..... | *1* | *2* | *3* | *4* | 50% |
|---|---|---|---|---|---|
| | $5.00 | 6.00 | 7.00 | 8.00 | |
| *Cup Leathers—Per 100:* | | | | | |
| *Inch*.... | 2½ | *3* | 3½ | *4* | |
| | $5.00 | 7.00 | 9.00 | 12.00 | |

### Punches—
*Saddlers' or Drive, good*..... doz. 50@75¢
*Spring, single tube, good quality* .....$1.75
*Revolving (4 tubes)*....doz.$3.50
Bemis & Call Co.'s Cast St'l Drive..50%
Morrill's Nos. 1AA, 1A, 1B, 1C, 1D, $15.00.....50%
Hercules, 1 die each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Wm. Scholihorn Co.:
Belt and Ticket, Bernard, 35%; Paragon, 50%; Lodi.....55%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., per doz., $1.44.....40%

## Rail—Barn Door, &c.—
*Sliding Door, Painted Iron*.... 2½@2¾¢
*Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢*.....30%
Allith Mfg. Co.: Reliable Hanger Track .....50%
Cronk's:
Double Braced Steel Rail..per ft. 3¼¢
O. N. T. Rail.....$3.12
Griffin's:
xxx, per 100 ft., 1 x 3-16 in., $3.25; 1¼ x 3-16 in., $3.75.
Hinged Hanger, per 100 ft., 1 x 3-16 in., $3.50; 1¼ x 3-16 in., $4.00.
Lane's:
Hinged Track, per 100 ft. .....$3.45
O. N. T. per 100 ft., 1 in., $3.00; 1¼ in., $3.45; 1½ in., $4.00.
Standard, 1¼ in.....per 100 ft. $4.00
Lawrence Bros.:
1 x 3-16 in., per 100 ft., $7.50; 1¼ x 3-16 in., $8.75.....55&7½%
McKinney's:
Hinged Hanger Track, per ft., 11¢ 60&5%
1 x 3-16 Track.....55&7½%
Myers' Stayon Track.....60&5%
Richards' Mfg. Co.:
Common, 1 x 3-6 in., $3.00; 1¼ x 3-16, $3.25; 1¾ x 3-16, $3.50.
Special Hinged Hanger Rail...60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, per ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
No. 50.....60&10%
Nos. 61, $3.00; 62, $3.25; 63, $3.50; 64, $4.00; 45, $3.25; 46, $3.50; 49, No. 1, $3.25; 49, No. 2, $3.50.

### Rakes—
*NOTE.—Many goods are sold at net prices.*
Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Cronk's:
Steel Garden: Champion, 75%; Ideal, 80%; Victor.....80&25%
Queen City Lawn, per doz., 20 teeth, $2.85; 24, $3.00.....net
Anticlog Lawn, per doz.....$1.00
Malleable Garden.....70&10%
Ideal Steel Garden, per doz., 12 teeth, $15.00; 14, $16.00; 16, $18.00.....80%
Kohler's:
Lawn Queen, 20-tooth....per doz, $3.15
Lawn Queen, 24-tooth....per doz. $3.25
Paragon, 20-tooth.....per doz. $2.70
Paragon, 24-tooth.....per doz. $2.75
Steel Garden, 14-tooth....per doz. $2.40
Malleable Garden, 14-tooth, per doz. $2.00@2.25

### Rasps, Horse—
Disston's .....75%
Heller Bros.'.....70&5@70&10&5%
Liveright Bros.' Gold Medal.70&10@75%
McCaffrey's American Standard, 60&10&5%
New Nicholson.....70&10@75%
See also Files.

### Razors—
Liana Bo-ras-ic.....60%
Fox Razors, per doz., No. 42, $20.00; No. 44, $20.00; No. 82, Plattna, $25.00. } Nile 40%
Red Devil.....65%

### Reels, Fishing—
Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 96 PN.....30%
2904 P, 33¼% P, 2904 PN, 33¼% P, 9924 N, 33¼%; 02084 N, 33¼%; 002904 PN, 33¼%; 802 N, 33¼%.....25%
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

### Registers—*List July 1, 1903.*
*Japanned, Electroplated and Bronzed* .....70@70&10%
*White Porcelain Enamel*..50&10%
*Solid Brass or Bronze Metal*.40%

### Revolvers—
*Single Action*.....$5¢@$1.00
*Double Action, except 44 cal*..$2.00
*Double Action, 44 caliber*....$2.00
*Automatic* .....$4.00
*Hammerless* .....$4.50

### Riddles, Hardware Grade
*16 in*.....*per doz*.$2.50@$2.75
*17 in*.....*per doz*.$2.75@$3.00
*18 in*.....*per doz*.$3.00@$3.25

### Rings and Ringers—
#### Bull Rings—

| | 2 | 2½ | 3 inch. |
|---|---|---|---|
| *Steel* | $0.70 | 0.75 | 0.80 doz. |
| *Copper* | $1.10 | 1.25 | 1.65 doz. |

#### Hog Rings and Ringers—
*Hill's Rings, gro. boxes*.$4.25@$4.50
*Hill's Ringers, Gray Iron, doz., 60@75¢*
*Hill's Ringers, Malleable Iron*.. doz.80@95¢
*Blair's Rings..per gro.$5.00@$5.50*
*Blair's Ringers...per doz.75@90¢*
*Brown's Rings.per gro.$5.25@$5.50*
*Brown's Ringers..per doz.75@90¢*

### Rivets and Burrs—
*Copper* .....50%
*Carriage, Coopers', Tinners, &c.: Black* .....70&10%
*Metallic Tinned*.....70%

### Bifurcated and Tubular—
*Assorted in Boxes.*
*Bifurcated, per doz. boxes, pasteboard boxes, 50 count, 23@25¢; Tin boxes, 100 count, 29@32¢.*
*Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.*

### Rollers—
Cronk's Stay, No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56, $0.75; No. 60.....$0.75
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%

### Rope—
*Manila, 7-16 in. diam. and larger: Pure* .....*lb.*, 10½@11½¢
*Sisal, 7-16 in. diam. and larger: Pure* .....*lb.*, 7½@8¢
*Sisal, 7-16 in. diam. and larger: No. 2 quality*.....*lb.*, 6½@7¢
*Sisal, Hay, Hide and Bale Ropes, Medium and Coarse: Mixed* .....*lb.*, 6½@7¢
*Pure* .....*lb.*, 7¾@8¼¢
*Sisal, Tarred, Medium Lath Yarn, Coarse and Untarred: Mixed* .....*lb.*,5¼@5¾¢
*Pure* .....*lb.*, 6½¢
*Cotton Rope: Best, ¼-in. and larger*...18@20¢
*Medium, ¼-in. and larger.16@17¢*
*Common, ¼-in. and larger*..10¢
*In coils, ½¢ advance.*
*Jute Rope: Thread, No. 1, ¼-in. & up, lb*., 6¼¢
*Thread, No. 2, ¼-in. & up, lb*., 5¼¢

#### Wire Rope—
*Galvanized* .....37½¢&2½%
*Plain* .....45¢&2½%

### Ropes, Hammock—
Covert Mfg. Co.:
Jute, 35%; Sisal.....25%

### Rules
*Boxwood* .....60@60&10%
*Ivory* .....35&10@35&10&5%
Chapin-Stephens Co.:
Boxwood .....60%
Flexifold .....40%
Ivory .....25@25&10%
Miscellaneous.....50@50&10%
Stephens' Combination.....55%
Stationers'.....50@50&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%
Upson Nut Co.:
Boxwood .....60@60&10%
Ivory .....35&10@35&10&10%

## Sash Balances—
See *Balance, Sash.*

### Sash Locks—See *Locks, Sash.*

### Sash Weights—
See *Weights, Sash.*

### Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

### Saw Frames—
See *Frames, Saw.*

### Saw Sets—See *Sets, Saw.*

### Saw Tools—See *Tools, Saw.*

### Saws—

Circular ..... 45%
Band ..... 50@50&10%
Butcher Saws ..... 50%
Cross Cuts ..... 35%
One-Man Cross Cut ..... 40%
Narrow Cross Cut ..... 50%
Hand, Rip and Panel ..... 35&5%
Miter Box and Compass ..... 40%
Mulay, Mill and Drag ..... 45%
Wood Saws ..... 40&10%
Chapin-Stephens Co.:
Turning Saws and Frames..30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws.....30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth..50%
Band, 2 to 18 in. wide ..... 60%
Band, ¼ to 1¾ ..... 60%
Crosscuts ..... 45%
Narrow Crosscuts ..... 50%
Mulay, Mill and Drag ..... 50%
Framed Woodsaws ..... 25%
Woodsaw Blades ..... 25%
Woodsaw Rods, Tinned ..... 15%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8 ..... 25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination ..... 30%
Compass, Key Hole, &c. ..... 25%
Butcher Saws and Blades ..... 30%
C. E. Jennings & Co.'s:
Back Saws ..... 16⅔%
Butcher Saws ..... 25&7½%
Compass and Key Hole Saws ..... 33⅓&7½%
Framed Wood Saws ..... 25&7½%
Hand Saws ..... 12½%
Wood Saw Blades ..... 33⅓&7½%
Millers Falls:
Butcher Saws ..... 15&10%
Star Saw Blades ..... 15&10%
Massachusetts Saw Works:
Victor Kitchen Saws ..... 40&10&50%
Butcher Saws Blades ..... 35@40%
Peace & Richardson's Hand Saws...30%
Simonds':
Circular Saws ..... 45%
Crescent Ground Cross Cut Saws..30%
One-Man Cross Cuts ..... 40&10%
Gang Mill, Mulay and Drag Saws.45%
Band Saws ..... 50%
Back Saws ..... 25@25&7½%
Butcher Saws ..... 35@35&7½%
Hand Saws ..... 25@25&7½%
Hand Saws, Bay State Brand ..... 45%
Compass, Key Hole, &c..25@25&7½%
Wood Saws ..... 40&7½%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws ..... 50%

### Hack Saw Blades and Frames—

Atkins' Hack Saw Blades A A A..25%
Disston's:
Concave Blades ..... 25%
Keystone Blades ..... 30%
Hack Saw Frames ..... 30%
Simonds File Co. ..... 35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180 ..... 40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades ..... 40&10%
Griffin's Hack Saw Frames..35&5&10%
Griffin's Hack Saw Blades...35&5&10%
Star Hack Saws and Blades ..... 15&10%
Sterling Hack Saw Blades....30&10&5%
Sterling Hack Saw Frames..30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00..10%
Victor Hack Saw Blades ..... 20%
Victor Hack Saw Frames ..... 40%
Whitaker Mfg. Co.:
National Hand Blades ..... 40%
National Hand Frames ..... 30&5%
National Power Blades ..... 30&10%

### Scroll—

Barnes, No. 7, $15 ..... 25%
Barnes' Scroll Saw Blades ..... 40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20 ..... 20%
Lester, complete, $10.00 ..... 15&10%
Rogers, complete, $3.50 and $4.00.. 15&10%

### Scales—

*Family, Turnbull's....50@50&10%*
*Counter:*
*Hatch, Platform, ½ oz. to 4 lbs. .....doz., $5.50*
*Two Platforms, ½ oz. to 8 lbs. .....doz., $16.00*
*Union Platform, Plain.$2.10@2.20*
*Union Platform, Stpd.$2.20@2.30*
Chatillon's:
Eureka ..... 25%
Favorite ..... 40%
Crocers' Trip Scales ..... 50%
The Standard Portables ..... 40%
The Standard R. R. and Wagon ..... 50&10%

### Scrapers—

*Box, 1 Handle.....doz. $2.00@2.25*
*Box, 2 Handle.....doz.$2.50@2.60*
*Ship....Light, $2.00; Heavy, $4.50*
Chapin-Stephens Co., Box...30@30&10%
Richards Mfg. Co., Foot ..... 60%

### Screws—Bench and Hand

*Bench, Iron, doz., 1 in., $2.50@2.75; 1⅛, $3.00@3.25; 1¼, $3.50@3.75*
*Bench, Wood ..... 20@20&10%*
*Hand, Wood...70&10@70&10&10%*
Chapin-Stephens Co., Hand..... 70@70&10&2½%

### Coach, Lag and Hand Rail—

*Lag, Cone Point...80&5@80&10%*
*Coach, Gimlet Point..80@80&5%*
*Hand Rail.....70&10@75%*

### Jack Screws—

*Standard List.....70&10@75%*
Millers Falls ..... 50&10&10%
Swett Iron Works ..... 70@75%

### Machine—

*Cut Thread, Iron, Brass or Bronze:*
*Flat Head or Round Head, 50@50&10%*
*Fillister Head.....40@40&10%*
*Rolled Thread, F. H. or R. H., Iron .....75&10%*
*F. H. or R. H., Brass, Nos. 8 to 14.....65&10%*

### Set and Cap—

*Set (Iron).....75&10&7½%*
*Set (Steel), net advance over Iron .....25%*
*Sq. Hd. Cap.....70&10&7½%*
*Hex. Hd. Cap.....70&10&7½%*
*Rd. Hd. Cap.....50&7½%*
*Fillister Hd. Cap.....60&7½%*

### Wood—

*List July 23, 1903.*
*Flat Head, Iron.....87½&5@..%*
*Round Head, Iron.....85&5@..%*
*Flat Head, Brass.....80&5@..%*
*Round Head, Brass..77½&5@..%*
*Flat Head, Bronze....75&5@..%*
*Round Head, Bronze.72½&5@..%*
*Drive Screws.....87½&5@..%*

### Scroll Saws—

See *Saws, Scroll.*

### Scythes— Per doz.

*Grass, No. 1, Plain.....$7.00@7.50*
*Clipper, Bronzed Webb.$7.25@7.75*
*No. 3 Clipper, Pol'd Webb.. $7.50@8.00*
*No. 6 Clipper and Solid Steel, $7.75@8.25*
*Bush, Weed and Bramble, Nos. 11, 12 and 13.....$7.25@7.75*
*Grain, No. 1.....$9.00@9.50*
*Bronzed Webb, No. 1...$9.25@9.75*
*Nos. 3 and 4 Clipper, Grain.. $9.50@10.00*
*Solid Steel, No. 6....$10.00@10.50*

### Seeders, Raisin—

Enterprise ..... 25@30%

### Sets— Awl and Tool—

Fray's Adj. Tool Handles, Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7 ..... 50%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18..20&10%

### Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel ..... ₩ doz sets $9.00

### Sets, Nail—

*Octagon .....gro. $3.50@3.75*
Buck Bros. ..... 27½%
Cannon's Diamond Point, ₩ gro, $12, 40&10%
Mayhew's ..... ₩ gro. $9.00
Snell's Corrugated, Cup Pt.....40&10%
Snell's Knurled, Cup Pt.....40&10%
Victor Knurled Cup Pt....₩ gro. $7.50

### Rivet—

*Regular list.....75@75&10%*

### Saw—

Atkin's:
Criterion ..... 40%
Adjustable ..... 40%
Disston's Star, Monarch and Triumph ..... 30%
Morrill's No. 1 ..... $15.00
Nos. 3 and 4, Cross Cut....$20.60
No. 5, Mill ..... $30.00
Nos. 10, 11, 95 ..... $15.60
No. 1 Old Style ..... $10.00
Special ..... $16.25
Giant Royal Cross Cut....₩ doz. $8.00
Royal, Hand ..... ₩ doz. $4.50
Taintor Positive ..... ₩ doz. $6.75

### Shaving—

Fox Shaving Sets, No. 20 ..... ₩ doz., net, $24.00
Smith & Hemenway Co.'s ..... 75%

### Sharpeners, Knife—

Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ₩ doz ..... $1.50
Mounted Kitchen Sand Stone, ₩ doz ..... $1.50
Natural Grit Carving Knife Hones, ₩ doz ..... $3.00
Quick Cut Emery Carving Knife Hones, ₩ doz ..... $1.50
Quick Edge Pocket Knife Hones, ₩ doz ..... $2.00

### Skate—

Smith & Hemenway Co., Eureka..50%

### Shaves, Spoke—

*Iron .....doz. $1.25*
*Wood .....doz. $2.00*
Bailey's (Stanley R. & L. Co.)..... 45%
Chapin-Stephens Co. ..... 30@30&10%
Goodell's, ₩ doz. $9.00 ..... 15&10%

### Shears—

| *Cast Iron..* | *7* | *8* | *9 in.* |
|---|---|---|---|
| *Best ....* | *$16.00* | *18.00* | *20.00 gro.* |
| *Good ...* | *$13.00* | *15.00* | *17.00 gro.* |
| *Cheap ..* | *$5.00* | *6.00* | *7.00 gro.* |

*Straight Trimmers, &c.:*
*Best quality Jap....70@70&10%*
*Best quality, Nickel..60@60&10%*
*Tailors' Shears.....40@40&10%*
Acme Cast Shears ..... 40@40&5%
Heinisch's Tailor's Shears ..... 10%
Wilkinson Shear & Cutlery Co.:
Sheep, 1900 list ..... 30&10&5%
Grass ..... 50&10%
Horse or Mule ..... 50&10%
J. Wiss & Sons Co.:
Best Quality Jap'd ..... 60&10%
Best Quality Nickeled ..... 50&10%
Tailors' ..... 25%

### Tinners' Snips—

*Steel Blades.....20&5@20&10%*
*Steel Bird Blades.....40&10@50%*
Forged Handles, Steel Blades, Berlin, 50%
Heinisch's Snips ..... 40%
Jennings & Griffin Mfg. Co.'s 6¼ to 10 in. ..... 33⅓&7½%
Niagara Snips ..... 40%
P. S. & W. Forged Handles, 25%; W. R. W. ..... 40&10%
J. Wiss & Sons Co.:
Wiss Forged Steel ..... 25%

### Pruning Shears—

Cronk's Hand Shears ..... 33⅓%
Cronk's Wood Handle Shears.....33⅓%
Disston's Combined Pruning Hook and Saw, ₩ doz $18.00 ..... 25%
Disston's Pruning Hook only, ₩ doz., $12.00 ..... 25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades ..... 40%
Parker, Kalon & W. Co. ..... 40&10%
Columbian Cutlery Co.:
Hedge, Wilcut Brand ..... 60&10%
Lawn and Border, Wilcut Brand. 60&10%

### Sheaves—Sliding Door—

Reading ..... 40%
R. & E. list ..... 15%

### Sliding Shutter—

Reading list ..... 40%
R. & E. list ..... 10%

### Shells—Shells, Empty—

Brass Shells, Empty:
Climax, 10 and 12 gauge ..... 65&10%
Club, Rival, 65&5%; First Quality, 60&5%
Paper Shells, Empty:
New Rapid, 10, 12, 16 and 20 gauge ..... 25&10%
Climax, 10 and 12 gauge; Acme, 10, 12, 16 and 20 gauge; Ideal, 10, 12, 16 and 20 gauge; Leader grade, 25&5%
Union, League, 12 and 12 gauge; Rival Grade ..... 25%
New Climax, Defiance, 10, 12, 14, 16 and 20 gauge; Climax, 14, 16 and 20 gauge ..... 20&5%
Challenge, Monarch, 10, 12, 16 and 20 gauge; League, Union, 14, 16 and 20 gauge; Repeater Grade..20%

### Shells, Loaded—

*Loaded with Black Powder..40%*
*Loaded with Smokeless Powder, medium grade .....40&5%*
*Loaded with Smokeless Powder, high grade .....40&10&10%*
Union Metallic Cartridge Co.:
New Club, Black Powders ..... 40%
Nitro Club, Smokeless Powders.40&5%
Arrow, Smokeless Powders.40&10&10%
Winchester:
Smokeless Repeater Grade.....40&5%
Smokeless Leader Grade...40&10&10%
Black Powder ..... 40%

### Shingles, Metal— Per Sq.

| Edwards Mfg. Co.: | Painted. | Galv. |
|---|---|---|
| 14 x 20 | $4.25 | $6.00 |
| 10 x 14 | 4.50 | 6.25 |
| 7 x 10 | 4.75 | 6.50 |

Wheeling Corrugating Co.:
Dixie, 14 x 20 in....$4.25 — $5.50
Dixie, 10 x 14 in.... 4.50 — 6.00
Dixie, 7 x 10 in.... 5.00 — 6.75

### Shoes, Horse, Mule, &c.—

*F.o.b. Pittsburgh:*
*Iron .....per keg. $4.10*
*Steel .....per keg. $3.85*
Burden's, all sizes ..... ₩ keg $3.90

### Shot—

*25-lb. bag.*
*Drop, up to B.....$1.85*
*Drop, B and larger..... 2.10*
*Buck ..... 2.10*
*Chilled ..... 2.10*
*Dust ..... 2.30*

### Shovels and Spades—

*Association List, Nov. 15, 1903..40%*
Avery Stamping Co. ..... 40%

### Snow Shovels—

*Long Handle.....$3.25@$3.50*
*Wood and Mail, D. Handle, $3.75@$4.00*

### Sieves and Sifters—

*Hunter's Imitation..... gro. $9.50@10.00*
*Hunter's Genuine..... per gro. $12.00@12.50*

### Sifters, Ash—

Acme Ball Bearing Sales Co., Acme Automatic Ash Sifter, each, $3.25; ₩ doz. ..... $39.00

### Sieves, Seamless Metallic

| | *Per dozen.* | | | |
|---|---|---|---|---|
| *Mesh .....* | *14* | *16* | *18* | *20* |
| *Iron Wire....* | *$1.05* | *1.05* | *1.10* | *1.20* |
| *Tinned Wire..* | *$1.15* | *1.15* | *1.20* | *1.30* |

### Sieves, Wooden Rim—

*Nested, 10, 11 and 12 Inch.*
*Mesh 18, Nested....doz. $0.90@0.95*
*Mesh 20, Nested....doz. $1.00@1.05*
*Mesh 24, Nested....doz. $1.30@1.40*

### Sinks, Cast Iron—

*Painted, Standard list:*
*12 x 12 to 22 x 36 in.....60%*
*20 x 40 to 24 x 50 in.....50%*
*24 x 60 to 24 x 120 in.....30%*
Barnes' low list:
Up to and including 20 x 36 in.50&5%
20 x 40 to 24 x 50 in. ..... 45%
*NOTE.—There is not entire uniformity in lists used by jobbers.*

### Skeins, Wagon—

*Cast Iron.....70@75&10%*
*Steel .....40@45%*

### Slates, School—

*Factory Shipments.*
*"D" Slates.....50@50&10%*
*Eureka, Unexcelled Noiseless.. 60&5 tens*
*Victor A, Noiseless.60&4 tens &5%*

### Slaw Cutters—See *Cutters.*

### Snaps, Harness—

*German .....40@40&10%*
Covert Mfg. Co.:
Derby, 25%; Yankee, 30&2%; Yankee Roller, 30&2%
High Grade, 40%; Trojan ..... 40%
Jockey ..... 25%

### Snaths—

*Scythe .....55@60%*

### Snips, Tinners—See *Shears.*

### Spoons and Forks—

#### Silver Plated—

*Good Quality.....50&10@60&5%*
*Cheap .....60@60&10%*
International Silver Co.:
1847 Rogers Bros., 40&10%; Rogers & Hamilton ..... 50&10%
Rogers & Bro., William Rogers' Eagle Brand ..... 50&10%
Anchor, Rogers Brand ..... 60%
Wm. Rogers & Son ..... 60&10%

#### Miscellaneous

*German Silver.....60@60&5%*

#### Tinned Iron—

*Teas .....per gro. 50@55¢*
*Tubics .....per gro. $0.90@$1.00*

### Springs— Door—

Bardsley's Spring and Check..... 40%
Chicago (Coil) ..... 40&10%
Gem (Coil) ..... 20%
Pullman Door and Gate ..... 10%
Reliance (Coil) ..... 40&10%
Star (Coil) ..... 30%
Torrey's Rod, 39 in..... ₩ doz. $1.10

### Carriage, Wagon, &c.—

*1¼ in. and Wider: Per 100 lb.*
*Black .....$4.75@$5.00*
*Half Bright.....$4.75@$5.00*
*Bright .....$5.25@$5.50*
*Painted Seat Springs:*
*1½ x 2 x 26.....per pr. 49@52¢*
*1½ x 3 x 28.....per pr. 73@77¢*

### Sprinklers, Lawn—

American Foundry & Mfg. Co.:
Cactus, 65%; Japanese, 70%; National, ₩ doz. ..... $12.00
Enterprise ..... 25@30%
Philadelphia No. 1, ₩ doz. $12; No. 2, $15; No. 3, $20 ..... 30%

### Squares—

*Nickel plated..* } *List Jan. 5, 1900.*
*Steel and Iron..* } *80@80&5%*
*Rosewood Hdl. Try Squares and T-Bevels .....60&10&10@70%*
*Iron Hdl. Try Squares and T-Bevels .....40&10@40&10&10%*
Disston's Try Squares and Bevels, Rosewood Handle, 60&10%; Iron Stock and Bevel ..... 15%

### Squeezers, Lemon

*Wood, Porcelain Lined:*
*Cheap .....doz. $1.00*
*Good Grade.....doz. $1.25*
*Tinned Iron.....doz. $0.75@1.25*
*Iron, Porcelain Lined...doz. $1.75*

### Staples—

*Barbed Blind.....85&5@85&10%*
*Electricians' .....80&10&10@85%*
*Fence Staples, Plain, $2.15; Galvanized .....$2.45*
*Poultry Netting Staples..... per lb. 3¼@3½¢*

### Steels, Butchers'—

Dick's ..... 30%
Foster Bros. ..... 30%

### Steelyards— ....30@30&10%

### Stocks and Dies—

*Blacksmiths' .....50@50&10%*
Curtis Rev'ble Ratchet Die Stock..25%
Derby Screw Plates ..... 25%
Green River ..... 25%
Lightning Screw Plate ..... 25%
Little Giant ..... 25%
Reece's New Screw Plates ..... 25%

### Stoners, Cherry—

Enterprise ..... 25@30%

### Stones—Oil, &c.

Pike Mfg. Co., 1907 list: ₩ lb
Arkansas St. No. 1, 3 to 5½ in. $2.80
Arkansas St. No. 1, 5½ to 8 in. $3.50
Arkansas Slips No. 1 ..... $4.00
Lily White Washita, 4 to 8 in. 60¢
Rosy Red Washita, 4 to 8 in..60¢
Washita St., Extra, 4 to 8 in. 50¢
Washita St., No. 1, 4 to 8 in. 40¢
Washita St., No. 2, 4 to 8 in. 25¢
Lily White Slips ..... 90¢
Rosy Red Slips ..... 90¢
Washita Slips, Extra ..... 80¢
Washita Slips, No. 1 ..... 70¢
Washita Slips, No. 2 ..... 40¢
India O.I Stones (entire list)....33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit ..... 40%
Quickcut Emery and Corundum Axe Stone, Double Grit ..... 33⅓%
Quickcut Emery Rubbing Bricks..40%
Hindostan No. 1, R'g'lar. ₩ lb 8¢
Hindostan No. 1, Small..₩ lb 10¢
Axe Stones (all kinds) .....
Turkey Oil Stones, Extra, 5 to 8 in. ..... ₩ lb 80¢
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips ..... 40¢
Sand Stone ..... 8¢

33⅓%

### Scythe Stones—

Pike Mfg. Co., 1901 list:
Black Diamond S. S., ₱ gro. $12.00
Lamoille S. S., ₱ gro. $11.00
White Mountain S. S., ₱ gro. $9.50
Green Mountain S. S., ₱ gro. $7.00
Extra Indian Pond S. S., ₱ gro. $8.00
No. 1 Indian Pond S. S., ₱ gro. $7.50
No. 2 Indian Pond S. S., ₱ gro. $5.00
Leader Red End S. S., ₱ gro. $5.00
Quick Cut Emery, ₱ gro. $10.00
Pure Corundum, ₱ gro. $18.00
Crescent, $7.00
Emery Scythe Rifles, 2 Coat, $8.80
Emery Scythe Rifles, 3 Coat, $11.00
Emery Scythe Rifles, 4 Coat, $13.20
} 33⅓%
Balance of 1904 list 33⅓%
Lectro (Artificial), ₱ gro., $12.00 33⅓%
Lightning (Artificial), ₱ gro., $18.00 33⅓%

### Stoppers, Bottle—

Victor Bottle Stoppers, ₱ gro. $9.00

### Stops—Bench—

Millers Falls 15&10%
Morrill's, ₱ doz., No. 1, $10.00 50%
Morrill's, No. 2, $12.50 50%

### Door—

Chapin-Stephens Co. 50@50&10%

### Plane—

Chapin-Stephens Co. 20%

### Straps—Box—

Acme Embossed, case lots 20&10&10%
Cary's Universal, case lots 20&10&10%

### Stretchers, Carpet—

*Cast Iron, Steel Points, doz. 55¢*
*All Steel Socket, doz. $2.00@2.25*
Excelsior Stretcher and Tack Hammer Combined, ₱ doz. $6.00 20%

### Stuffers, Sausage—

Enterprise Mfg. Co. 25@25&7½%
National Specialty Co., list Jan. 1, 1902 30&5%
P., S. & W. Co. 40&10&5%

### Sweepers, Carpet—

Bissell Carpet Sweeper Co.: ₱ doz.
Superba, Crotch Mahogany $36.00
Triumph, Fancy Veneers $33.00
Parlor Queen, Fig. Rosewood $30.00
Elite, Hungarian Ash $29.00
Am. Queen, Fig. Mahogany $27.00
Ideal, Bird's-Eye Maple $25.00
Grand Rapids, Nickel, $24.00; Japan $22.00
Standard, Nickel, $22.00; Japan $20.00
Crown Jewel, Nickel, $21.00; Jap. $19.00
Crystal, Glass Top $36.00
Grand, 17 in. wide $36.00
Parlor Grand $48.00
Club, 24 in. wide $54.00
Hall, 28 in. wide $60.00

*NOTE.—Rebates: 50c per dozen on three dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five dozen lots.*

### Tacks, Finishing Nails, &c.

*American Carpet Tacks* 90&40%
*American Cut Tacks* 90&40%
*Swedes' Cut Tacks* 90&40%
*Swedes' Upholsterers'* 90&50%
*Gimp Tacks* 90&50%
*Lace Tacks* 90&50%
*Trimmers' Tacks* 90&40%
*Looking Glass Tacks* 65%
*Bill Posters' and Railroad Tacks* 90&50&10%
*Hungarian Nails* 80&20%
*Finishing Nails* 70%
*Trunk and Clout Nails* 80&10%

*NOTE.—The above prices are for Straight Weights.*

### Miscellaneous—

*Double Pointed Tacks* 90&6 tens@—%
See also Nails, Wire.

### Tanks, Oil and Gasoline—

Wilson & Friend Co.:

| Gal. | Gasoline | Oil |
|---|---|---|
| 30 | $2.75 | $3.00 |
| 60 | $3.50 | $4.00 |
| 110 | $5.00 | $5.75 |

### Tapes, Measuring—

*American Asses' Skin* 50@—%
*Patent Leather* 25@50&5%
*Steel* 33 1-3&5%
*Chesterman's* 25@25&5%
Keuffel & Esser Co.:
Favorite, Ass Skin 40&10@50%
Favorite, Duck and Leather 25&5@25&10%
Metallic and Steel, lower list, 35@35&5%; Pocket, 35@35&5%.
Lufkin's:
Asses' Skin 40&10@50%
Metallic 30@30&5%
Patent Bend, Leather 25&5@25&10%
Pocket 40@40&5%
Steel 33⅓@35%
Wiebusch & Hilger:
Chesterman's Metallic, No. 34L, etc. 25%
Chesterman's Steel, No. 1038L, etc. 35%

### Teeth, Harrow—

*Steel Harrow Teeth, plain or headed, ⅝-inch and larger, per 100 lbs. $2.75@$3.00*

### Thermometers—

*Tin Case, Cabinet, Flange, Dairy, &c. 50@33⅓%*

### Ties, Bale—Steel Wire—

*Single Loop* 82½&10%
*Monitor, Cross Head, &c.* 70&2½%

### Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

### Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

### Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

### Tools—Coopers'—

L. & I. J. White 20@20&5%

### Haying—

Myers' Hay Tools 45%

### Miniature—

Smith & Hemenway Co.'s, Davidson, ₱ doz., Nickel Plated, $1.50; Gold Plated $2.00

### Saw—

Atkins' Cross Cut Saw Tools 35&5%
Simonds' Improved 33⅓%
Simonds' Crescent 25%

### Ship—

L. & I. J. White 25%

### Transom Lifters—

See *Lifters, Transom.*

### Traps—Fly—

*Balloon, Globe or Acme, doz. $1.15@$1.25; gro. $11.50@12.00*
*Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50*

### Game—

*Imitation Oneida* 75&10%
Newhouse 45@45&5%
Hawley & Norton 65%
Victor 75@75&10%
Oneida Community Jump 50%
Hector 75@75&10%

### Mouse and Rat—

*Mouse, Wood, Choker, doz. holes 12¢*
*Mouse, Round or Square Wire, doz. 85@90¢*
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, ₱ doz., $13.25..$11.50 doz.
No. 3, Rat, ₱ doz., $6.50... $5.75 doz.
No. 3½, Rat, ₱ doz., $5.25. $4.70 doz.
No. 4, Mouse, ₱ doz., $3.85. $3.00 doz.
No. 5, Mouse, ₱ doz., $3.00. $2.25 doz.
Oneida Community:
Out o' Sight, Mouse, ₱ doz.... $0.60
Out o' Sight, Rat, ₱ doz..... 1.25
Easy Set, Mouse, ₱ doz..... .35
Easy Set, Rat, ₱ doz..... 1.00
Wood Choker, Rat, ₱ doz. holes. .12
Premier Tin Choker, 5 hole, ₱ doz. traps..... .75

### Trowels—

Disston Brick and Pointing... 25%
Disston Plastering... 20%
Disston "Standard Brand" and Garden Trowels... 30%
Kohler's Steel Garden Trowels, ₱ gro., 5 in., $4.80; 6 in., $6.00.
Never-Break Steel Garden Trowels.. ₱ gro. $6.00
Woodrough & McParlin, Plastering 25%

### Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern 50&10%
Western Pattern 60&10%
Handy Trucks, ₱ doz. $16.00
Grocery, ₱ doz. $15.00
McKinney Trucks, each, net $10.00
Model Stove Trucks, ₱ doz. $18.50

### Tubs, Wash—

*M'f'gr's list, price per gross.*

| No. | 0 | 1 | 2 | 3 |
|---|---|---|---|---|
| Galvanized | $67 | $79 | $89 | $99 10&10% |

### Twine, Miscellaneous—

*Flax Twine:*
*No. 9, ¼ and ½-lb. Balls. 21@23¢*
*No. 12, ¼ and ½-lb. Balls. 19@21¢*
*No. 18, ¼ and ½-lb. Balls. 16@18¢*
*No. 24, ¼ and ½ -lb. Balls. 15½@17½¢*
*No. 36, ¼ and ½-lb. Balls. 15@17¢*
*Chalk Line, Cotton ½-lb. Balls* 24@30¢
*Cotton Mops, 6, 9, 12 and 15 lb. to doz.* 8½@19¢
*Cotton Wrapping, 5 Balls to lb., according to quality.. 13½@19¢*
*American 2-Ply Hemp, ¼ and ½-lb. Balls.* 12½@15¢
*American 3-Ply Hemp, 1-lb. Balls* 13½@16¢
*India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine)..* 7½@9¢
*India 3-Ply Hemp, 1-lb. Balls 7½@9¢*
*India 3-Ply Hemp, 1½-lb. Balls.* 7@8½¢
*2, 3, 4 and 5-Ply Jute, ½-lb. Balls* 9@11¢
*Mason Line, Linen, ½-lb. Bls.* 47¢
*No. 264 Mattress, ¼ and ½-lb. Balls, according to quality,* 30@60¢
*Wool, 3 to 6 ply....B 6¢; A 7½¢*

### Vises—

*Solid Box.....50&5@50&10&5%*

### Parallel—

Athol Machine Co.:
Simpson's Adjustable 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co. 40%
Fisher & Norris Double Screw, net, each, Nos. 2, $10.50; 3, $16.00; 4, $20.50; 5, $27.00.
Fulton Mach. & Vise Co.:
Reed, Swivel 25%
Star, Solid Jaw 40%
Hollands':
Machinists' 40@40&5%
Keystone 65&5@70%
Lewis Tool Co.:
Adjustable Jaw 30%
Monarch, 50%; Solid Jaw 50%
Massey Vise Co.:
Clincher 40%
Perfect, 15%; Lightning Grip 15%
Merrill's 20%
Millers Falls Oval Slide Pattern 60&10%
Parker's:
Victor, 20@25%; Regulars 20@25%
Vulcan's 40@45%
Combination Pipe 55@60%
Prentiss 20@25%
Rock Island 25%
Snediker's X. L. 33⅓%
Stephens' 33⅓%

### Saw Filers

Disston's D 3 Clamp and Guide, ₱ doz., $24.00, 30%; Clamps 30%
Perfection Saw Clamps, ₱ doz. $4.50
Reading 60%

### Wood Workers—

Fulton Mach. & Vise Co.:
Reed 25%
Star 40%
Massey Vise Co.:
Lightning Grip, 15%; Perfect 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

### Miscellaneous—

Holland's Combination Pipe 60@60&5%
Massey's Quick Action Pipe 40%
Parker's Combination Pipe: 87 Series, 60%; 187 Series, 60&5%; No. 870 40%
Rock Island Pipe 25%

### Wads—*Price per M.*

*B. E., 11 up* 60¢
*B. E., 9 and 10* 70¢
*B. E., 8* 80¢
*B. E., 7* 80¢
*P. E., 11 up* $1.00
*P. E., 9 and 10* 1.25
*P. E., 8* 1.50
*P. E., 7* 1.50
} Dis. 15%
*Ely's B. E., 11 and larger.* $1.70@1.75
*Ely's P. E., 12 to 20* $3.00@3.25

### Ware, Hollow—Cast Iron, Hollow—

*Stove Hollow Ware:*
*Enameled* 45¢10%
*Ground* 50&5%
*Plain or Unground* 60%
*Country Hollow Ware, per 100 lbs.* $3.00
*White Enameled Ware:*
*Maslin Kettles* 65¢10%
*Covered Wares:*
*Tinned and Turned* 35¢10%
*Enameled* 45¢10%
See also *Pots, Glue.*

### Enameled—

Agate Nickel Steel Ware 33⅓%
Iron Clad Ware 70&10%
Lava and Volcanic, Enameled 40&10%

### Tea Kettles—

*Galvanized Tea Kettles:*

| Inch | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| Each | 45¢ | 50¢ | 55¢ | 65¢ |

### Steel Hollow Ware—

Avery Spiders and Griddles 65@65&5%
Avery Kettles 60%
Porcelained 50&5@50&10%
Never Break Spiders and Griddles 65&5%
Never Break Kettles 60%
Solid Steel Spiders and Griddles 65&5%
Solid Steel Kettles 60%

### Warmers, Foot—

Pike Mfg. Co., Soapstone 40@40&10%

### Washboards—

Solid Zinc: ₱ doz.
Crescent, family size, bent frame $4.05
Red Star, family size, stationary protector $4.05
Double Zinc Surface:
Saginaw Globe, family size, stationary protector $3.55
Cable Cross, family size, stationary protector $3.60
Single Zinc Surface:
Naiad, family size, open back, perforated $3.00
Single Saginaw Globe $2.85
Brass Surface:
Brass King, Single Surface, open back $4.05
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.60
Glass Surface:
Glass King, Single Surface, open back $3.95
Enamel Surface:
Enamel King, Single Surface, ventilated back $3.95

### Washers—Leather, Axle—

*Solid* 90@90&10%
*Patent* 90@90&5%
*Coil:* ⅞ 1 1⅛ 1¼ *Inch.*
9¢. 10¢. 11¢. 14¢. *per box*

### Iron or Steel—

*Size bolt....* 5-16 ⅜ ½ ⅝ ¾
*Washers....* $4.65 3.75 2.45 2.25 2.05
*The above prices are based on $6.75 off list.*
*In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.*

### Cast Washers—

*Over ½ inch, barrel lots..... per lb. 1¾@2¢*

### Wedges—

*Oil Finish.....lb., 2¼@2¾¢*

### Weights—Hitching—

Covert Mfg. Co. 30&2%

### Sash—

*Per net ton, f.o.b. factory:*
*Eastern District* ——
*Western and Central Districts* $21.00@$23.00

### Wheels, Well—

*8-in., $2.00; 10-in., $2.45; 12-in., $3.25; 14-in., $4.45.*

### Wire and Wire Goods—

*Bright and Annealed:*
*6 to 9* 72&10&7½%
*10 to 18* 72½&10&10%
*19 to 26* 75&10&10&2½%
*27 to 36* 77½&7½%
*Galvanized:*
*6 to 9* 72½&10%
*10 to 14* 72½&10&5%
*15 to 16* 72½&10&5%
*17 to 18* 72½%
*19 to 26* 70&5&2½%
*27 to 36* 65&10&10%
*Coppered:*
*6 to 9* 65&10&10%
*10 to 14* 70&10&5%
*15 to 18* 65&10&10&10%
*19 to 26* 70&5&2½%
*27 to 36* 72½&10&2½%
*Tinned:*
*6 to 18* 67&10&10%
*Brass* 17¢ lb., *base*
*Copper* 32¢ lb., *base*
*Cast Steel Wire* 50%

### Spooled Wire—

*Annealed and Tinned,* 70&10&10&10%
*Brass and Copper...* 60&10&10&10%
*Retailers' Assortments, per box.* $2.10@$2.40
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

### Bright Wire Goods—

*Steel Wire Goods* 90&25@—%
*Brass Wire Goods* 90@90&10%
*Brass Cup and Shoulder Hooks,* 85&10%

### Wire Cloth and Netting—

*Galvanized Poultry Netting,* 80&2½@80&7½%
*Painted Screen Cloth, 100 ft., $1.35*
*Standard Galv. Hardware Grade: 100 ft. rolls, 2½ to 48 in. wide, per 100 sq. ft.*
*Nos. 2, 2½ and 3 Mesh* $2.75
*Nos. 4 and 5 Mesh* $3.00
*No. 6 Mesh* $3.25
*Nos. 7 and 8 Mesh* $3.75

### Wire, Barb—See *Trade Report*

### Wrenches—

*Agricultural* 80&10&10%
*Alligator or Crocodile..* 70&10@75%
*Baxter Pattern S Wrenches..* 70&5@70&10%
*Drop Forged S* 45@45&5%
Acme 60&10%
Alligator Pattern, 70%; Bull Dog 70%
Bemis & Call's:
Adjustable S, 40%; Adjustable S Pipe, 40%; Briggs Pattern, 40%; Combination Bright, 40%.
Steel Handle Nut 50%
Combination Black 40&5%
Merrick Pattern 50%
Boardman's 40%
Coes' Genuine Knife Hdl. 40&10&5&5%
Coes' Genuine Steel Hdl. 40&10&5&5%
Coes' Genuine Key Model. 40&10&5&5%
Coes', Genuine Hammer Handle 40&10&5&5%
Coes' "Mechanics'" 40&10&10&5&5%
Donohue's Engineer 40&10%
Eagle 70%
Gem Pocket 30%
Hercules 10%
W. & B. Machinist:
Case lots 50&5%
Less than case lots 50%
W. & B. Railroad Special:
Case lots 50%
Less than case lots 40&10&5%
Solid Handles, P., S. & W. 50&10%; full cases 50&10&5%
Stillson 65%
Uwanta Wrench Co.:
Uwanta Special, Iron Handle, 40&10&5%
Other Wrenches 50%
Vulcan and Agrippa Chain 50%
Whitaker Machinists':
Case lots 50&10%
Less than case lots 50%

### Wrought Goods—

*Staples, Hooks, &c., list March 17, '92* 85&10&10%

### Zinc—(*Cask lots at mill.*)

*Sheet.....per 100 lb. $7.00*

For the Table of "Current Metal Prices" see the First Issue of Every Month.